REVISION HISTORY BX1 CHASSIS

MODEL

KV-HW21M80
KV-HW21M83
KV-HW21M80J

PART NO.: 9-872-408-01

NO.	SUFFIX	DATE	SUPP / CORR	DESCRIPTION
1	-01	2003/11	_ _	1st Issue

Self Diagnosis
Supported model

SERVICE MANUAL

BX1 CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-HW21M80	RM-W101	Saudi Arabia	SCC-V10B-A
KV-HW21M83	RM-W101	Saudi Arabia	SCC-V10D-A
KV-HW21M80J	RM-W101	Saudi Arabia	SCC-V10H-A

(KV-HW21M83)

(KV-HW21M80/HW21M80J)

TRINITRON® COLOR TV

SONY®

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CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self diagnostic function. If an error occurs, the STANDBY (⏻) indicator will automatically begin to flash. A description of the self-diagnosis function is explained in the instruction manual. The number of times the STANDBY (⏻) indicator flashes translates to a probable source of the problem. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

1. DIAGNOSTIC TEST INDICATORS

When an errors occurs, the STANDBY (⏻) indicator will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the indicator will identify the first of the problem areas.

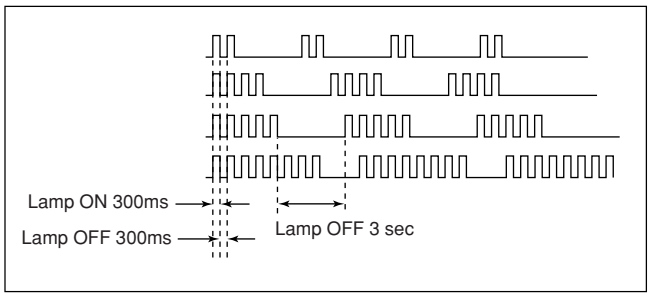
Result for all of the following diagnosis items are displayed on screen. No error has occured if the screen displays a "0".

Diagnosis Item Description	No. of timer STANDBY (⏻) indicator flashes	Self-Diagnostic display/ Diagnosis result	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light	–	• Power cord is not plugged in. • Fuse is burned out (F600) A board.	• Power does not turn on. • No power is supplied on TV. • AC Power supply is faulty.
+B overcurrent (OCP)*	2 times	2:0 or 2:1 ~ 255	• H OUT (Q805) is shorted. (A board) • IC751 is shorted. (C board)	• Power does not turn on. • Load on power line is shorted.
V-Protect	4 times	4:0 or 4:1 ~ 255	• +13V is not supplied. (A board) • IC804 is faulty. (A board)	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is shorted.
IK (AKB)	5 times	5:0 or 5:1 ~ 255	• Video OUT (IC1545) is faulty. (A board) • IC001 is faulty. (A board) • Screen (G2) is improperly adjusted.**	• No raster is generated. • CRT Cathode current detection reference pulse output is small.
Power supply NG (+5V) for Video Processor	8 times	8:0 or 8:1 ~ 255	• IC604 faulty. • IC602 faulty.	• No power supply to CRT ANODE. • No RASTER is generated.

* If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the micro controller is displayed on the screen.

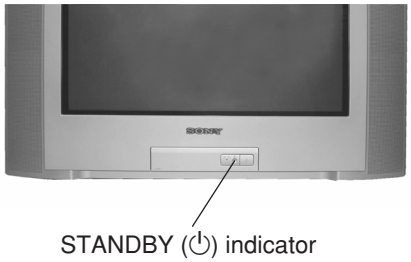
** Refer to Screen (G2) Adjustment in this manual.

2. DISPLAY OF STANDBY (⏻) INDICATOR FLASH COUNT



Diagnostic Item	Flash Count*
+B overcurrent	2 times
V-Protect	4 times
IK (AKB)	5 times
Power Supply NG (+5V) for Video processor	8 times

* One flash count is not used for self-diagnosis.



3. STOPPING THE STANDBY (⏻) INDICATOR FLASH

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY (⏻) indicator from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

For errors with symptoms such as "power sometimes shuts off" or "screen sometimes goes off" that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

[To Bring Up Screen Test]

In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Display ➡ Channel 5 ➡ Volume − ➡ Power ⏻ / TV

⇧

Note that this differs from entering the service mode (volume +).

The following screen will be displayed indicating the error count.

SELF DIAGNOSTIC	
2 :	0
3 :	N/A
4 :	0
5 :	1
8 :	0
101 :	N/A

Numeral "0" means that no fault was detected.
Numeral "1" means the number of a fault occurrence (1 ~ 255).

5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to "0".

Unless the result display is cleared to "0", the self-diagnosis function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]

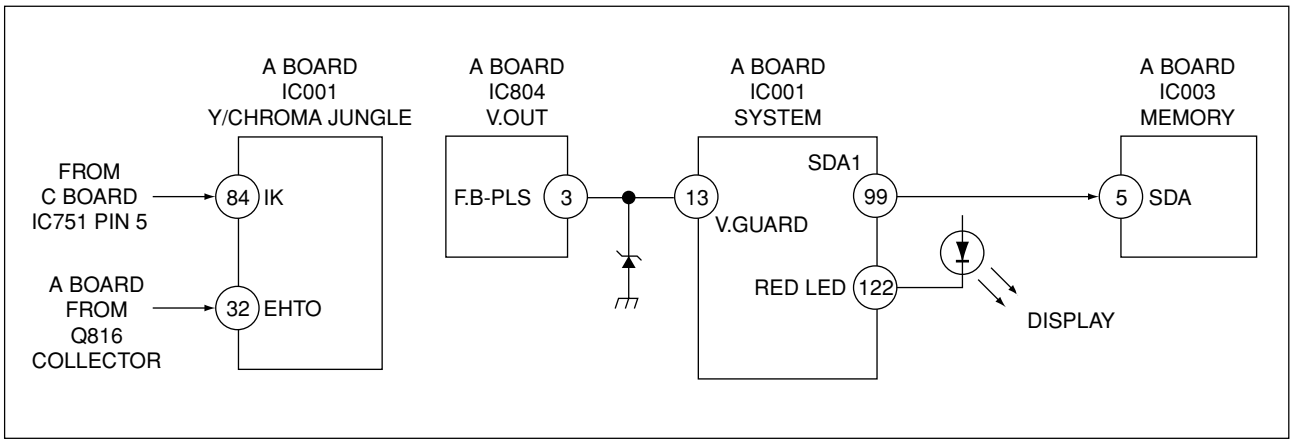
To clear the result display to "0", press buttons on the remote commander subsequent as shown below when the self-diagnostic screen is being displayed.

[8] ➡ [0]

[Quitting Self-diagnostic screen]

To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT

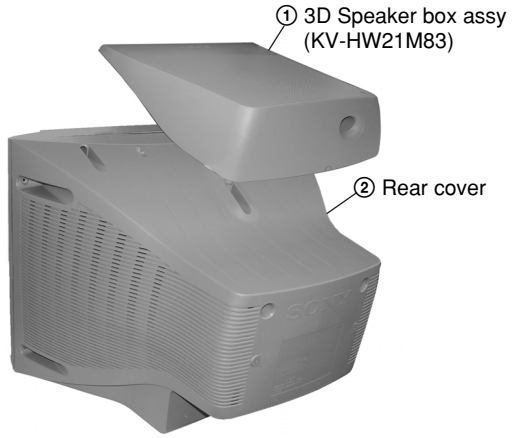


[+B overcurrent (OCP)]	Occurs when an overcurrent on the +B(135V) line is detected by pin 32 of IC001 (A board). If the voltage of pin 32 of IC001 (A board) is more than 4V, the unit will automatically go to standby.
[V-PROTECT]	Occurs when an absence of the vertical deflection pulse is detected by pin 13 of IC001 (A board).
[IK (AKB)]	If the RGB levels* do not balance within 15 sec after the power is turned on, this error will be detected by IC001 (A board). TV will stay on, but there will be 5 times LED blinking.
[POWER SUPPLY NG (+5V) for VIDEO PROCESSOR]	Occurs when IC001 internal HV protect detects an abnormal H-Pulse (frequency) due to improper power supply to IC001. TV cuts off high voltage power of anode CRT. No picture will be detected. eg: IC602, IC604 go faulty.

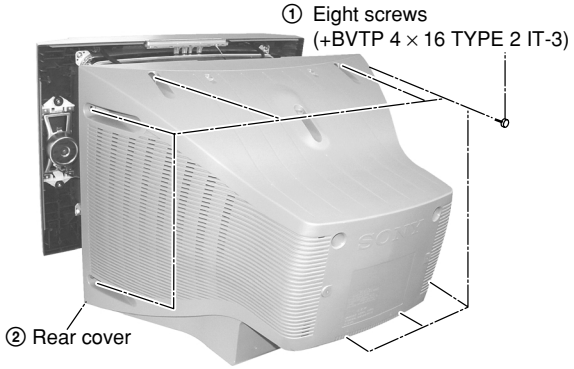
* (Refers to the RGB levels of the AKB detection Ref pulse that detects IK.)

SECTION 1
DISASSEMBLY

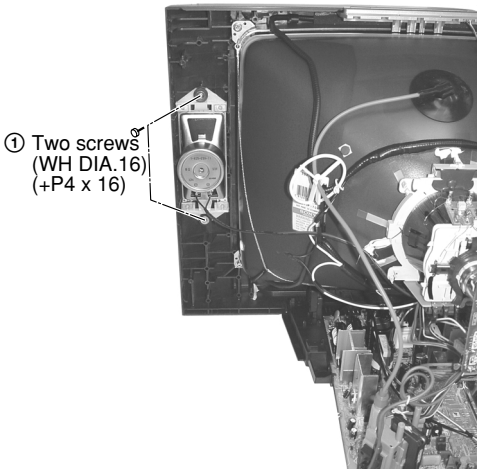
1-1. 3D SPEAKER REMOVAL



1-2. REAR COVER REMOVAL

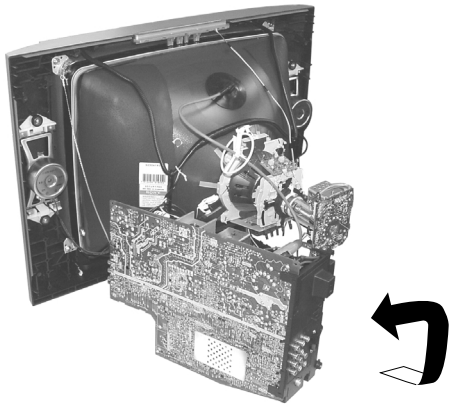


1-3. SPEAKER REMOVAL

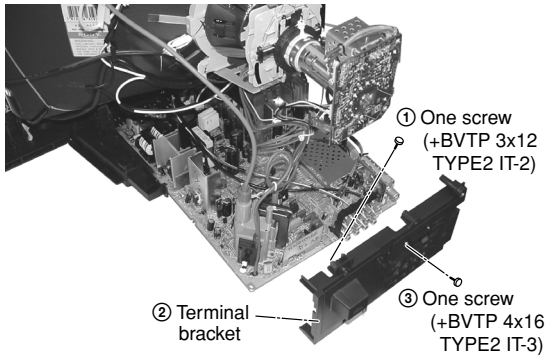


1-4. CHASSIS ASSY REMOVAL

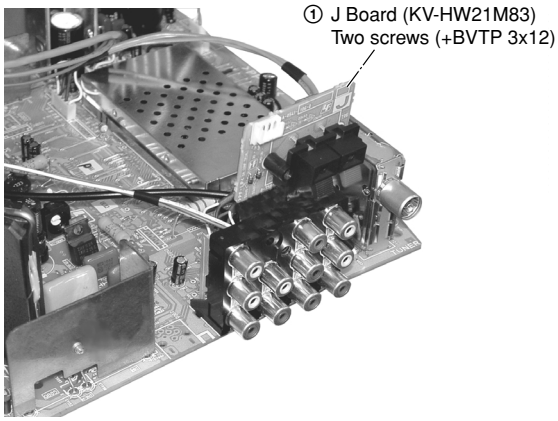
1-5. SERVICE POSITION



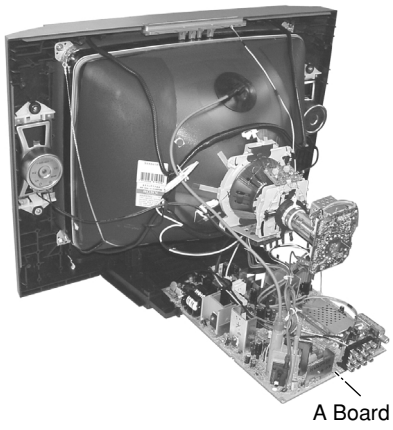
1-6. TERMINAL BRACKET REMOVAL



1-7. J BOARD REMOVAL



1-8. A BOARD REMOVAL

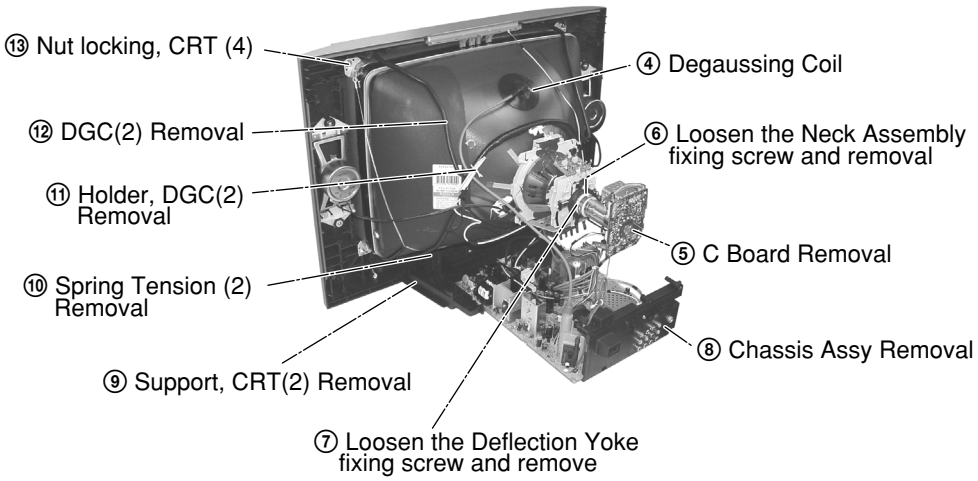


1-9. PICTURE TUBE REMOVAL

Note:

- Please make sure the TV set is not in standing position before removing necessary CRT support located on bottom right and left.

1) Place the TV set with the CRT face down on a cushion jig.
2) Remove the rear cover.
3) Unplug all under connecting leads from the Deflection Yoke, Degaussing Coil and CRT grounding strap.

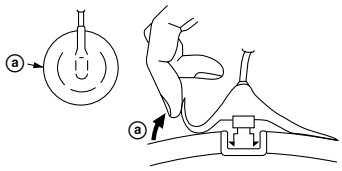

⑬ Nut locking, CRT (4)
④ Degaussing Coil
⑫ DGC(2) Removal
⑥ Loosen the Neck Assembly fixing screw and removal
⑪ Holder, DGC(2) Removal
⑤ C Board Removal
⑩ Spring Tension (2) Removal
⑧ Chassis Assy Removal
⑨ Support, CRT(2) Removal
⑦ Loosen the Deflection Yoke fixing screw and remove

• REMOVAL OF ANODE-CAP

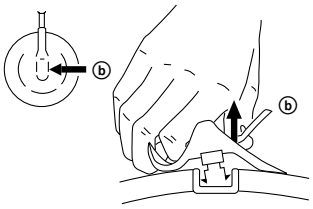
Note:

- After removing the anode, short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT.

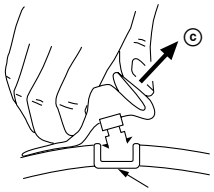
• REMOVING PROCEDURES



① **Turn up one side of the rubber cap in the direction indicated by the arrow Ⓐ.**



② **Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow Ⓑ.**
③ **When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by**

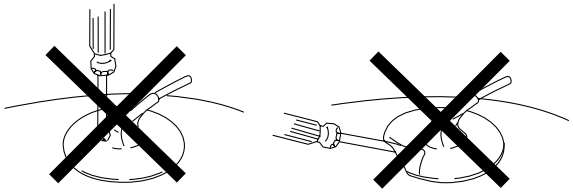


anode button

turning up the rubber cap and pulling it up in the direction of the arrow Ⓒ.

• HOW TO HANDLE AN ANODE-CAP

① **Do not damage the surface of anode-caps with sharp shaped objects.**
② **Do not press the rubber too hard so as not to damage the inside of anode-cap.**
A metal fitting called the shatter-hook terminal is built into the rubber.
③ **Do not turn the foot of rubber over too hard.**
The shatter-hook terminal will stick out or damage the rubber.



SECTION 2
SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

Set the controls as follows unless otherwise noted:
VIDEO model ..... Standard
PICTURE control ..... normal
BRIGHTNESS control ..... normal

Perform the adjustments in the following order :
1. Beam Landing
2. Convergence
3. Focus
4. Screen(G2)
5. White Balance

Note : Test Equipment Required.
1. Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital Multimeter
5. Oscilloscope

Preparation :
- In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
- Switch on the set's power and degauss with the degausser.

2-1. BEAM LANDING

Picture Mode: DYNAMIC
1. Input a white signal with the pattern generator.
   Contrast, Brightness } normal
2. Set the pattern generator raster signal to a green raster.
3. Move the deflection yoke to the rear and adjust with purity control so that the green is at the center and the blue and the red take up equally sized areas on each side. (See Figures 2-1 through 2-4.)
4. Move the deflection yoke forward and adjust so that the entire screen is green. (See Figure 2-1.)
5. Switch the raster signal to blue then to red and verify the condition.
6. When the position of the deflection yoke has been decided fasten the deflection yoke with the screws and DY spacers.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Figure 2-4.)

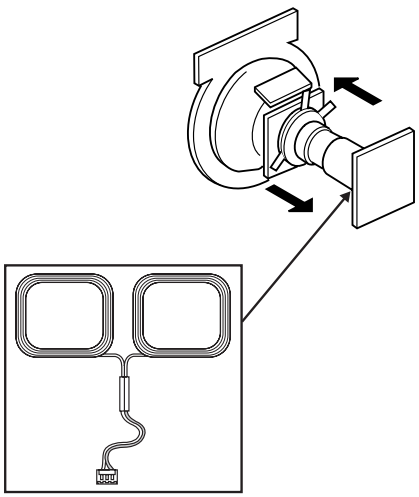


Fig. 2-1

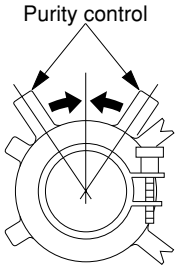


Fig. 2-2

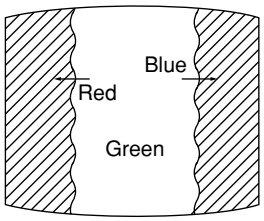


Fig. 2-3

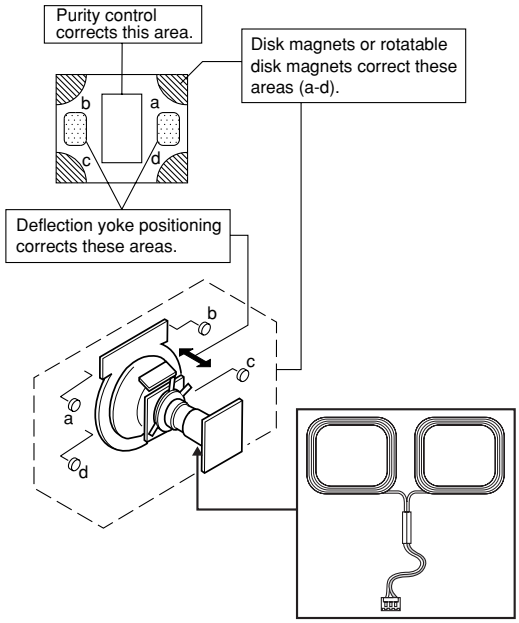
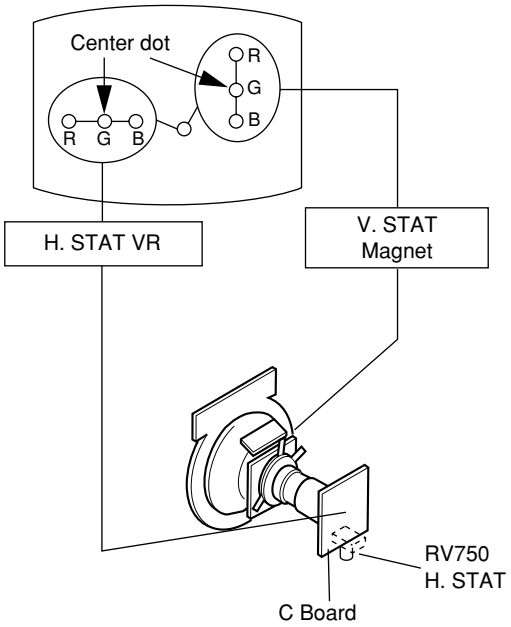


Fig. 2-4

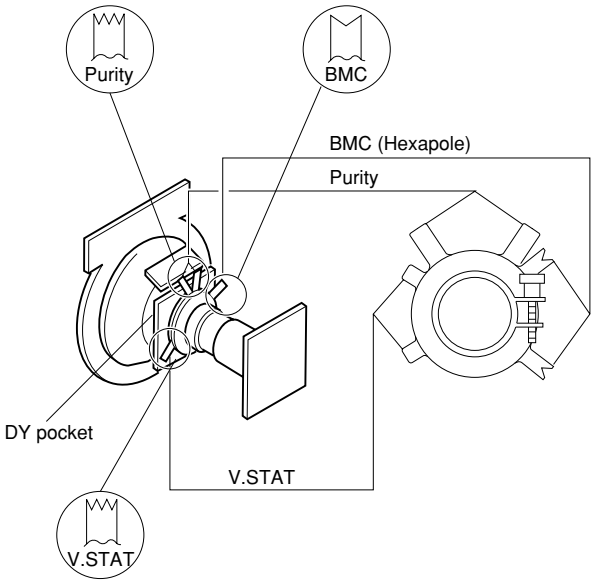
2-2. CONVERGENCE

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Receive dot/hatch signal.
- Pic mode: Soft.

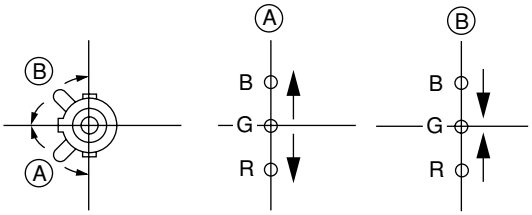
(1) Horizontal and Vertical Static Convergence



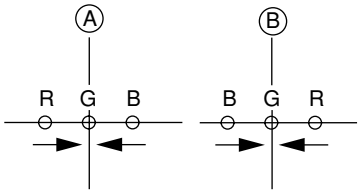
1. (Moving vertically), adjust the V.STAT magnet so that the red, green and blue dots are on top of each other at the center of the screen.
2. (Moving horizontally), adjust the H.STAT control so that the red, green and blue dots are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green and blue dots together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other, so be sure to perform adjustments while tracking.)



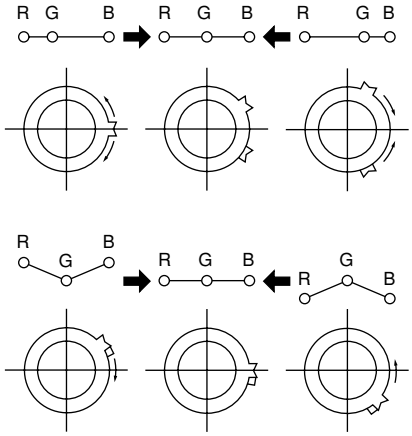
Operation of V.STAT magnet
If the V.Stat magnet is moved in the "Ⓐ" and "Ⓑ" arrows, the red, green and blue dots moves as shown below.



Moved RV750 H.STAT.
the red, green and blue dots move as shown below.



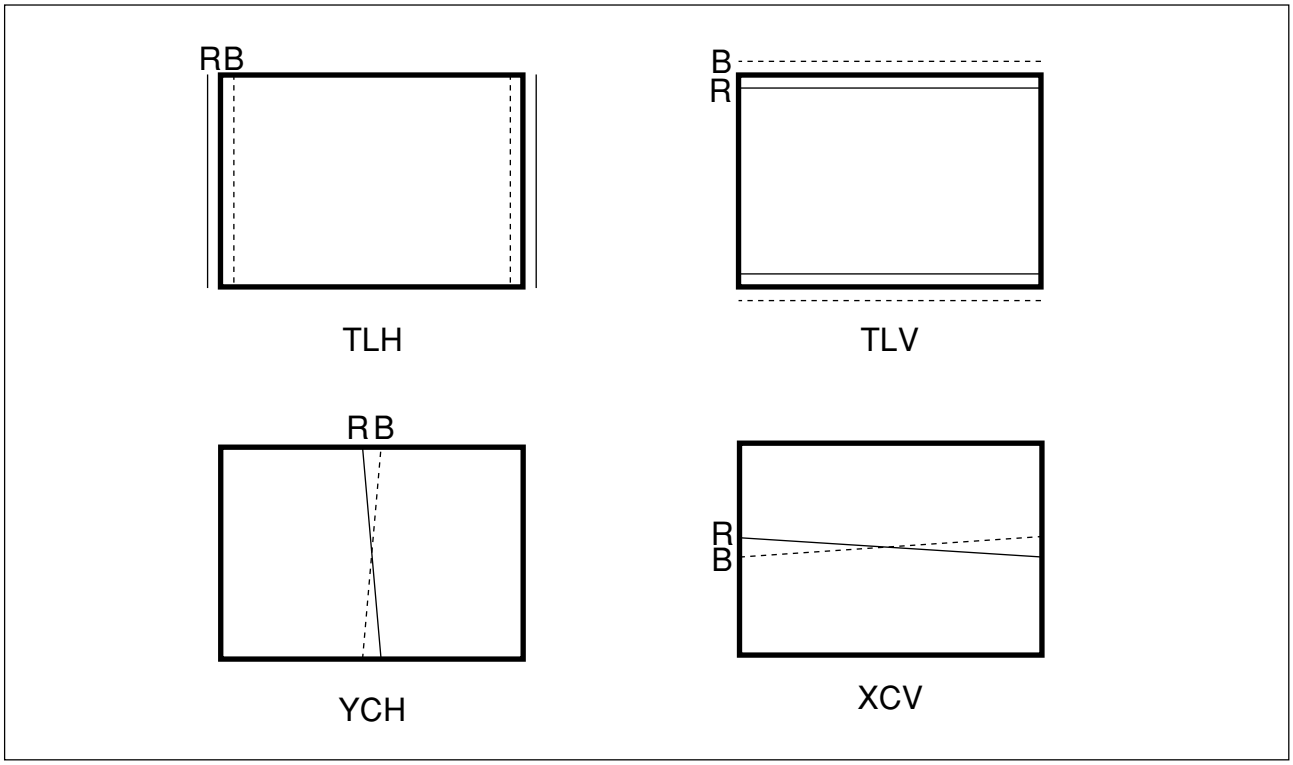
4. BMC (Hexapole) Magnet.
   If the red, green and blue dots are not balanced or aligned, then use the BMC magnet to adjust in the manner described below.



(2) Convergence Rough Adjustment

Preparation:

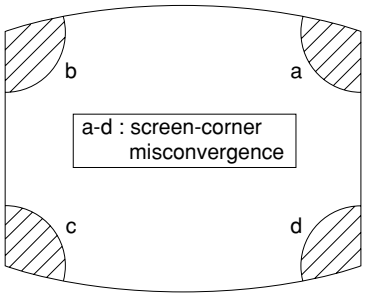
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence



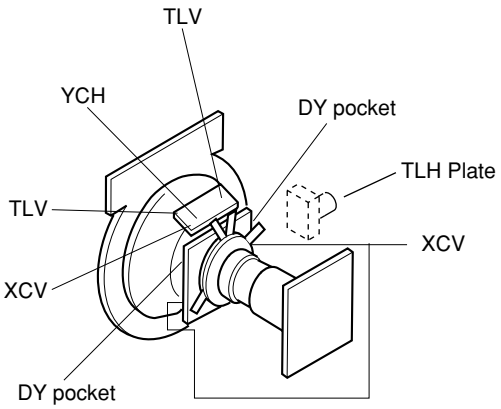
TLH	Insert	TLH	Correction Plate to DY Pocket (Left or Right)
YCH	Insert	YCH	VOL on DY
TLV	Rotate	TLV	VOL on DY
XCV	Rotate	XCV	Adj core on DY

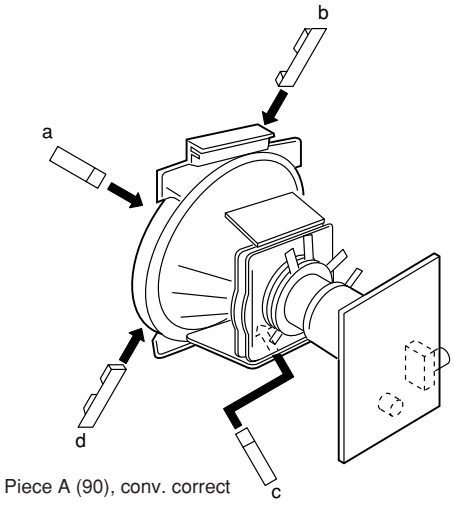
(3) Screen corner Convergence

1. Affix a Piece A (90), conv. correct corresponding to the misconverged areas.



ON DY:



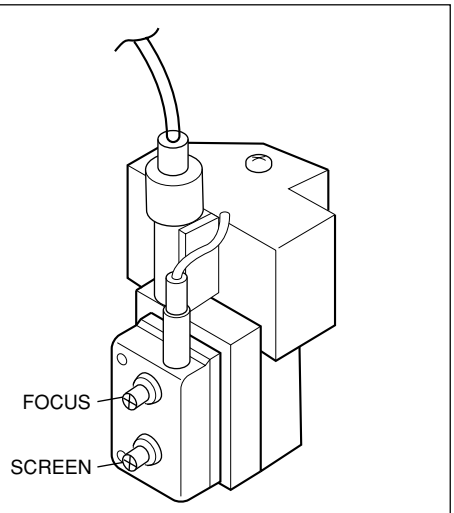


Piece A (90), conv. correct

2-3. FOCUS ADJUSTMENT

FOCUS adjustment should be completed before the W/B adjustment:

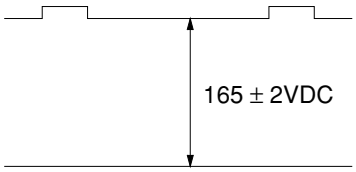
1. Receive digital monoscope pattern.
2. Set picture mode: DYNAMIC.
3. Adjust focus VR to obtain a just focus at the center of the screen.
4. Change receiving signal to white pattern and blue back.
5. Confirm MAGENTA RING is not noticeable. Incase magenta ring is obvious, then adjust FOCUS VR to balance magenta ring and FOCUS.



FLYBACK TRANSFORMER (T802-14")
FLYBACK TRANSFORMER (T801-21")

2-4. G2 (SCREEN) ADJUSTMENT

1. Set the PICTURE & BRIGHTNESS to STANDARD.
2. Put the Video input mode signal.
3. Connect R,G,B of the C board cathode to oscilloscope.
4. Adjust Brightness to obtain the cathode value to value below.
5. Adjust G2 (screen) on the FBT until picture shows the point before cut off.



2-5. WHITE BALANCE ADJUSTMENT

1. Set to Service Mode (Refer Section 3-1: ADJUSTMENTS WITH COMMANDER)
2. Input white raster signal.
3. Set Picture to <DYNAMIC mode>
4. Select RDRV (02) with [1] and [4] and fixed the value to 25 with [3] and [6].
5. Adjust WHBL GDRV (03) and BDRV (04) with [1] and [4] and adjust the data with [3] and [6] for best white balance in Highlight condition.
6. Write into the memory by pressing [MUTING] then [0].
7. Adjust WHBL BKOR (00) and BKOG (01) with [1] and [4] and adjust the level with [3] and [6] for best white balance cut-off condition.
8. Write into memory by pressing [MUTING] then [0].
9. US model need to apply only for colour temperature in Neutral.

2-6. SUB BRIGHT ADJUSTMENT

1. Set to service mode.
2. Brightness set to 50%, Picture....Minimum
3. Select WHBL SBRT (10) with [1] and [4] and adjust SBRT (10) data with [3] and [6] so that the third stripe from right dimly lit.
4. Write into the memory by pressing [MUTING] then [0].
5. GA models C/O: 20 IRE
   S/G: 30 IRE

SECTION 3
CIRCUIT ADJUSTMENTS

3-1. ADJUSTMENT WITH COMMANDER

Service adjustments to this model can be performed using the supplied remote commander RM-W101.

a. ENTERING SERVICE MODE

With the unit on standby

→ [DISPLAY] → [5] → [VOL (+)] → [POWER]

This operation sequence puts the unit into service mode.
This screen display is:

category	item no. in decimal	item name	service data in decimal	NVM NG	service command	field frequency	channel no./ video input name
GEOM	006	HSIZ	031	■	SERVICE	60	S VIDEO 1

release ID	software version	service data in binary	reserved for factory	color system	power on time (decimal?)
SUS01	0.69U	0001 1111	FF FF	NTSC3	65535

	Flash DCXO	Status Byte #1 SSD	Status Byte #2 SSD
111 11 11 1 7 11	FG	xy 111 000000	000000

VDSP_C Flag
CO_LOCKED
VDSP
Detected Stereo Type (Direct Value from CZ_ Stereo_Mode)

S : for Sony
A : Aiwa
U S : US/Latin/Taiwan
E U : Europe
G A : General Area
J P : Japan
0 1 : serial no. of the M/P release for each destination

[111] Needed for Nicam DCXO aligment Purpose

[xy] Value of x = 0 - Unknown, 1 - BTSC, 2 - A2, 3 - NICAM, 4 - KOREAN, 5 - Japan, 6 - AV Stereo
Value of y = 0 - Mono, 1 - Stereo, 2 - Bilingual, 4 - SAP/Single

b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press [POWER] button on the commander), then press [POWER] button again, hereupon it becomes TV mode.

c. METHOD OF WRITE INTO MEMORY

1. Set to Service Mode.
2. Press [1] (UP) and [4] (DOWN), to select the adjustment item.
3. Change item by pressing [3], [6].
4. Press [MUTING] button to indicate WRITE on the screen.
5. Press [0] button to write into memory.

[1], [4]	Select the adjustment item.
↓	
[3], [6]	Raise/lower the data value.
↓	
[MUTING]	Writes.
↓	
[0]	Executes the writing.

d. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again to confirm adjustments were made.

e. OTHER FUNCTION VIA REMOTE COMMANDER

7, 0	All the data becomes the values in memory.
8, 0	All user control goes to the standard state.
Display, 0	Service data initialization (Be sure not to use usually.)
2, 5	Select Device or Category

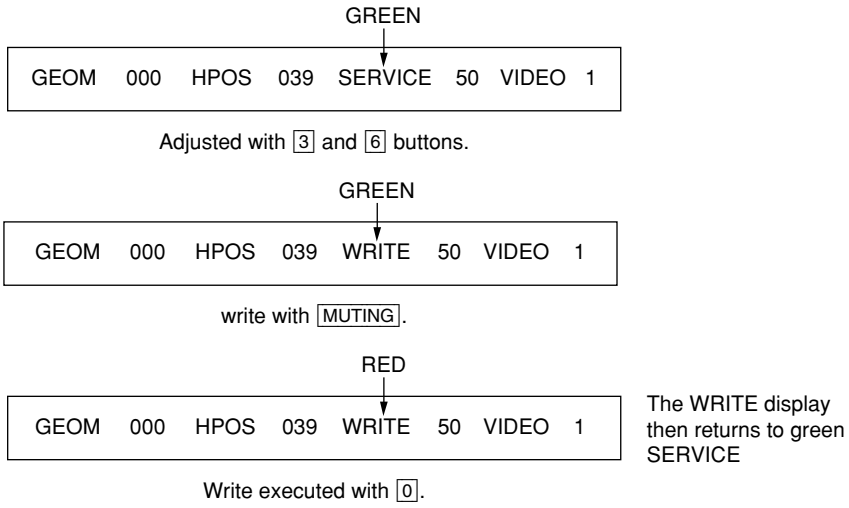
3-2. ADJUSTMENT METHOD

Item Number 000 HPOS

This explanation uses H POSITION as an example.

1. Select "000 HPOS" with the 1 and 4 buttons, or 2 and 5.
2. Raise/lower the data with the 3 and 6 buttons.
3. Select the optimum state. (The standard is IF for PAL reception.)
4. Write with the MUTING button. (The display changes to WRITE.)
5. Execute the writing with the 0 button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)

Example on screen display :-


GREEN
GEOM 000 HPOS 039 SERVICE 50 VIDEO 1
Adjusted with 3 and 6 buttons.
GREEN
GEOM 000 HPOS 039 WRITE 50 VIDEO 1
write with MUTING.
RED
GEOM 000 HPOS 039 WRITE 50 VIDEO 1
The WRITE display then returns to green SERVICE
Write executed with 0.

Use the same method for all Items. Use 1 and 4 to select the adjustment item, use 3 and 6 to adjust, write with MUTING, then execute the write with 0.

Note : 1. In WRITE, the data for all items are written into memory together.
2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)				
Category	No.	Name	Dec	Dec				(Slave Address)	Common	50	60	w50	w60
GEOM	000	HPOS	031	063	ADJUST	Horizontal Shift (HS)	50/60/w50/w60 (+JPN RGB)	TV-Processor		42	42	42	42
	001	HPAR	031	063	ADJUST	Horizontal Parallelogram	50/60/w50/w60	(8Ah)		31	31	31	31
	002	HBOW	031	063	ADJUST	Horizontal Bow	50/60/w50/w60			31	31	31	31
	003	VLIN	031	063	ADJUST	Vertical Linearity	50/60/w50/w60			31	31	31	31
	004	VSCR	031	063	ADJUST	Vertical Scroll	50/60/w50/w60			31	31	31	31
	005	HSIZ	031	063	ADJUST	EW Width (EW)	50/60/w50/w60			25	25	25	25
	006	EWPW	031	063	ADJUST	EW Parabola/Width (PW)	50/60/w50/w60 (+JPN RGB)			31	31	31	31
	007	UCOP	017	063	ADJUST	EW Upper Corner Parabola	50/60/w50/w60			31	31	31	31
	008	LCOP	017	063	ADJUST	EW Lower Corner Parabola	50/60/w50/w60			31	31	31	31
	009	EWTZ	031	063	ADJUST	EW Trapezium	50/60/w50/w60			31	31	31	31
	010	VSLP	031	063	ADJUST	Vertical Slope (VS)	50/60/w50/w60			31	31	31	31
	011	VSIZ	015	063	ADJUST	Vertical Amplitude	50/60/w50/w60			15	15	15	15
	012	SCOR	014	063	ADJUST	S-Correction (SC)	50/60/w50/w60			25	25	25	25
	013	VPOS	031	063	ADJUST	Vertical Shift (VSH)	50/60/w50/w60			31	31	31	31
	014	HBL	000	001	FIX	RGB Blanking Mode	50/60/w50/w60			01	01	01	01
	015	WBF	007	015	FIX	Timing of Wide Blanking (WBF)	50/60/w50/w60			07	07	07	07
	016	WBR	007	015	FIX	Timing of Wide Blanking (WBR)	50/60/w50/w60			10	10	10	10
	017	SBL	000	001	FIX	Service Blanking	none		00				
	018	COPY	000	001	FIX	Copy the GEO data to all 50/60Hz NVM area	none		00				

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)															
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Col Temp (HIGH other)	Col Temp (LOW other)	Col Temp (NORM other)	Col Temp (HIGH YUV)	Col Temp (LOW YUV)	Col Temp (NORMAL YUV)	Col Temp (HIGH RGB)	Col Temp (LOW RGB)	Col Temp (NORM RGB)	Others	RGB	YUV	Pic mode 0	Pic mode 1	Pic mode 2	Pic mode 3
WHBL	000	BKOR	031	063	ADJUST	Black Level Offset R	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	TV-Processor		31	31	31	31	31	31	31	31	31							
	001	BKOG	031	063	ADJUST	Black Level Offset G	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	(8Ah)		31	31	31	31	31	31	31	31	31							
	002	RDRV	037	063	FIX	White Point R	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)	TV-Pro (8AH)		37	37	37	37	37	37	37	37	37							
	003	GDRV	037	063	ADJUST	White Point G	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)			31	31	31	31	31	31	31	31	31							
	004	BDRV	037	063	ADJUST	White Point B	col temp (HIGH/LOW/Normal)*(UV/RGB/Others)			31	31	31	31	31	31	31	31	31							
	005	LPG	000	001	FIX	RGB Gain Preset	none		01																
	006	PGR	031	127	FIX	Preset Gain R (PGR)	none		**																
	007	PGG	031	127	FIX	Preset Gain G (PGG)	none		**																
	008	PGB	031	127	FIX	Preset Gain B (PGB)	none		**																
	009	GNOF	000	015	FIX	Preset Gain Offset	none	CCC loop	15																
	010	SBRT	031	063	ADJUST	Sub-Brightness	Others/RGB/YUV												31	31	31				
	011	SBRO	000	003	FIX	Sub-Brightness Offset (Intelligent Pic)	none		00																
	012	EGL	000	001	FIX	Enable Gain Loop in CCC System	none		01																
	013	SGL	000	003	FIX	Selection of High Current in CCC System	none		00																
	014	AKB	000	001	FIX	Black Current Stabilization	none		00																
	015	CBS	000	001	FIX	Control Sequence of Beam Current Limiting	none		00																
	016	RGBB	000	003	FIX	RGB Blanking	none		00																
	017	BLBG	000	001	FIX	Blanking of Blue & Green Output	none		00																
	018	OFB	000	001	FIX	Black Level Offset Blue	none		01																
	019	NSBR	000	015	FIX	Non Standard Brightness Offset	none		05																
	020	WBP	000	003	FIX	Color Temp Setting (0:High, 1:Normal, 2,3:Low)	Picture Mode															00	01	02	01

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)																							
Category	No.	Name	Dec	Dec				(Slave Address)	Common	YUV	50pal (TV)	50pal (Video)	50secam (TV)	50secam (Video)	60TV	60Video	50YUV	60YUV	50RGB	60RGB	Pic mode 0	Pic mode 1	Pic mode 2	Pic mode 3	Dynamic*Eco std (Jpn)	Dynamic*Eco much (Jpn)	Standard*Eco std (Jpn)	Standard*Eco much (Jpn)	Eco std (Jpn)	Eco much (Jpn)	TV	Video	TV Wide	Video Wide	AVM (Jpn)	AV Wide (Jpn)
SADJ	000	PMAX	063	063	ADJUST	Picture Maximum	(TV / Video)*(Normal / Wide) / <Normal / Wide> (+JPN RGB)	TV-Processor																							37	37	37	37	37	37
	001	SHUE	007	015	ADJUST	Sub-Hue	TV / Video																								07	07				
	002	SSHP	015	063	FIX	Sub-Sharpness	TV / Video / YUV (+JPN RGB)			**																					**	**				
	003	SSHO	000	003	FIX	Sub-Sharpness Offset (Intelligent Pic)	none		02																											
	004	SCOL	031	063	ADJUST	Sub-Color	50pal(tv)/50pal(video)/50secam(tv)/50secam(video)/ 60TV/60video/50YUV/60YUV/50RGB/60RGB				31	31	31	31	31	31	31	31	31	31																
	005	SCOO	000	003	FIX	Sub-Color Offset (Intelligent Pic)	none		02																											
	006	PIC	031	127	FIX	Picture Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															100	80	95	100												
	007	COL	031	127	FIX	Color Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															56	50	40	50												
	008	BRT	031	127	FIX	Brightness Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															50	50	60	50												
	009	HUE	031	127	FIX	Hue Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															50	50	50	50												
	010	SHP	031	127	FIX	Sharpness Control [GA:0-100(valid), >100(invalid); Others:0-63(valid); ignore bit 6(invalid)]	Picture Model(GA: Personal = User Reset Data)															60	50	50	50												
	011	PECO	002	003	FIX	Picture data in power save mode (valid for JAPAN only)	Picture Mode * (Eco std/ Eco much)																			00	00	00	00								
	012	PRLV	002	003	FIX	Coefficient of power save mode (valid for JAPAN only)	Eco std / Eco much																							00	00						

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)													
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Others	RGB	YUV	PAL(TV)	NTSC(TV)	SECAM(TV)	PAL(Video)	NTSC(Video)	SECAM(Video)	S-INPUT	SECAM	NTSC	TV
YC	000	PFRQ	000	003	FIX	Peaking Center Frequency and Delay		TV-Processor	**													
	001	RPA	####	003	FIX	Ratio Pre & Over Shoot	TV/other			02												02
	002	RPO	002	003	FIX	Ratio of Positive & Negative Peaks	TV/other			02												02
	003	YDLY	012	015	FIX	Y-Delay	(PAL/NTSC/SECAM)*(TV/VIDEO)+YUV/S-INPUT					**	**	**	**	**	**	**	**			
	004	CMAT	000	003	FIX	PAL-SECAM or NTSC (Japan/USA) Matrix	(JPN RGB)		00													
	005	ACL	001	001	FIX	Automatic Color Limiting			01													
	006	CB	000	001	FIX	Chroma Bandpass Center Frequency	valid only with TV (*Video:0 fix)		01													
	007	SBO	001	003	FIX	SECAM Black Offset			00													
	008	CHSE	001	003	FIX	PAL/NTSC Ident Sensitivity			02													
	009	CLO	000	001	FIX	Center Frequency of Cloche(Bell) Filter			00													
	010	CTRP	000	001	FIX	Chroma Trap Mode	SECAM/others			00											01	
	011	BPS	000	001	FIX	Bypass of Chroma Base-band Delay Line	NTSC/others			**												**
	012	FCO	000	001	FIX	Forced Color On			00													
	013	TINT	031	063	FIX	Base-Band Tint Control	YUV/others			31		31										
	014	TUV	000	001	FIX	Tint Control on UV Signals			00													

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)									
Category	No.	Name	Dec	Dec				(Slave Address)	Common	50	60	others	YUV	TV	Video	Teletext	TV-ip	No signal
SYNC	000	SYS	000	001	FIX	Synchronization on YSYNC Input			00									
	001	FO	000	003	FIX	Phase 1 Time Constant	TV IP ON/TV IP OFF/Video/Teletext/Auto Tuning or No signal(RF)							03	03	01	00	00
	002	VID	000	001	FIX	Video Ident Mode	50/60			00	00							
	003	FSL	000	001	FIX	Forced Slicing Level for Vertical Sync			00									
	004	SSL	000	001	FIX	Slicing Level Sync Separator	50/60			00	00							
	005	SVID	001	007	FIX	Source Selection for Video Identification	YUV/Others					00	07					
	006	FORF	000	003	FIX	Forced Field Frequency			03									
	007	MVK	000	001	FIX	Macro Vision Keying			01									

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)											
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Others	RGB	Live	TV (Dyn)	TV (Others)	Video (Dyn)	Video (Others)	ColorTemp (HIGH)	ColorTemp (Others)	Color Temp(LOW)	Color Temp (NORMAL)
PICT	000	CADL	007	015	FIX	Cathode Drive Level			00											
	001	CFA	000	003	FIX	Comb Filter Mode			**											
	002	SOC	002	003	FIX	Soft Clipping Level		(8Ah)	00											
	003	PWL	001	001	FIX	Peak White Limiting Switch			01											
	004	WHTL	006	015	FIX	Peak White Limiting			00											
	005	GAM	001	001	FIX	Gamma			00											
	006	WTS	001	003	FIX	Gamma Control and White Stretch	Live/Others			01		01								
	007	TFR	000	001	FIX	DC Transfer Ratio of Luminance Signal	Live/Others (+JPN RGB)			01	00	01								
	008	COR	003	003	FIX	Coring	(TV/Video)*(Dyna/others)						00	00	00	00				
	009	CORO	000	001	FIX	Coring Offset (Intelligent Pic)			00											
	010	BKS	003	003	FIX	Black Stretch	RGB/others			02	02									
	011	AAS	001	001	FIX	Black Area to Switch off the Black Stretch			00											
	012	DSK	000	001	FIX	Dynamic Skin Control			00											
	013	BLS	000	001	FIX	Blue Stretch	col temp (HIGH/OTHERS)										00	00		
	014	NBLS	000	001	FIX	Operation Blue Stretch Circuit			00											
	015	NRR	000	001	FIX	Non Red Reduction	col temp (HIGH/LOW/NORMAL)										01		01	01

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)			
Category	No.	Name	Dec	Dec				(Slave Address)	Common	YUV	TV	Video
SW	000	CV2	000	001	FIX	CVBS2 Input Signal Selection			00			
	001	SVO	001	003	FIX	Function of IFVO/SVO/CVBSI Pin @ 48	TV/Video/YUV			02	01	01
	002	DFL	000	001	FIX	Flash Protection			00			

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
VIF	000	OIFD	036	063	FIX	Offset IF Demodulator		TV-Processor	36
	001	AGCT	031	063	FIX	AGC Take-over		(8Ah)	31
	002	STM	000	001	FIX	Search Tuning Mode			01
	003	GD	000	001	FIX	Group Delay on CVBS1 Signal			00
	004	AGCS	001	003	FIX	IF AGC Speed			01
	005	FFI	000	001	FIX	Fast Filter IF PLL			00
	006	OAMP	003	003	FIX	Video Output Signal Amplitude (only L & L'System)			03
	007	VAI	000	001	FIX	System I Output Signal Amplitude Correction (only L & L'System)			00

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	NVM Address / Initial Value (Detailed)				
Category	No.	Name	Dec	Dec				(Slave Address)	Common	Pic mode 0	Pic mode 1	Piv mode 2	Pic mode 3
VM	000	RGBD	003	007	FIX	Delayof RGB Output to VM Output	none	TV-Processor	02				
	001	VMA	003	003	FIX	Amplitude of VM Output	none	(8Ah)	**				
	002	VMAP	002	003	FIX	VM setting (0:High, 1:Low, 2,3:OFF)	Picture Mode			00	01	02	00
	003	VMMO	003	003	FIX	VM Mode			01				

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
SDEM	000	FMWS	000	003	FIX	Window Selection for FM Demodulator		TV-Processor	02
	001	QSS	001	001	FIX	Quasi Split Sound (QSS) Amplifier Mode (except GA Model)		(8Ah)	01
	002	BPB	000	001	FIX	Bypass of Sound Bandpass Filter			00
	003	AMLO	000	001	FIX	Audio Output Signal for AM Sound			00
	004	HPVC	000	001	FIX	Head Phone Volume Control			00

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name	Common
Category	No.	Name	Dec	Dec				(Slave Address)	
TXT	000	TXV	039	063	FIX	Teletext Vertical Position for Philips		Text Decoder	39
	001	THD	005	127	FIX	Teletext H-sunc Active Edge Shift			05
	002	TBR	004	015	FIX	Teletext RGB Brightness			11

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	NVM Address / Initial Value (Detailed)								
Category	No.	Name	Dec	Dec					Common	TV-L(Euro)	TV	Video	Off	SRS/WOW	Trusurround	Istereo	Imono
SDSP	000	AVM	002	007	FIX	AVL Mode		SSD	02								
	001	AVV	005	015	FIX	AVL Reference Level		(B0h)	09								
	002	BBL	000	015	FIX	BBE Contour			**								
	003	BBH	000	015	FIX	BBE Process			**								
	004	BBLW	000	015	FIX	BBE Contour Offset			**								
	005	SVOF	000	015	FIX	Surround /Effect Mode Volume Offset	Off(SRS/WOW)/Trusurround/Istereo/Imono						00	07	00	02	00
	006	IVOF	000	007	FIX	Master Volume Positive Offset			06								
	007	EVOF	000	007	FIX	Master Volume Negative Offset			06								
	008	LAD	000	031	FIX	Decoder Level Adjust			05								
	009	LAM	000	031	FIX	Mono Level Adjust			05								
	010	LAN	000	031	FIX	Nicam Level Adjust			17								
	011	LAS	000	031	FIX	SAP Level Adjust			08								
	012	LAA	000	031	FIX	ADC Level Adjust	Tv/Video(Non Euro)I TV-L/TV-non L/Video			00	00	00					
	013	SEF	003	007	FIX	Incredible Mono/Stereo Effect	Istereo/Imono									05	03
	014	A1L	000	255	FIX	AUX1 Volume Left			00								
	015	A1R	000	255	FIX	AUX1 Volume Right			00								
	016	BAS	008	015	FIX	Main Bass Offset			**								
	017	TRE	008	015	FIX	Main Treble Offset			**								
	018	EQ1	008	015	FIX	Equalizer Main Channel Band (100 Hz) Offset			**								
	019	EQ2	008	015	FIX	Equalizer Main Channel Band (300 Hz) Offset			**								
	020	EQ3	008	015	FIX	Equalizer Main Channel Band (1000 Hz) Offset			**								
	021	EQ4	008	015	FIX	Equalizer Main Channel Band (3000 Hz) Offset			**								
	022	EQ5	008	015	FIX	Equalizer Main Channel Band (8000 Hz) Offset			**								
	023	BFCT	005	007	FIX	DBE, DUB and BBE Control			**								
	024	SCEN	001	015	FIX	SRS3D Center Control			04								
	025	SSPA	000	015	FIX	SRS3D Space Control			01								
	026	BBHW	000	015	FIX	BBE process offset in WOW mode			**								
	027	STRE	002	007	FIX	Treble Offset for surround mode			**								
	028	BBHT	000	015	FIX	BBE Offset in TV mode			00								
	029	DWA	000	000	FIX	DWA???			00								
	030	TTRE	002	007	FIX	Treble Offset in TV Mode			02								

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	Common
Category	No.	Name	Dec	Dec					
SDEC	000	MPTU	003	015	FIX	Upper Threshold for MPX pilot detection (BTSC)		SSD	02
	001	MPTL	009	015	FIX	Lower Threshold for MPX pilot detection (BTSC)		(B0h)	05
	002	SPTU	003	015	FIX	Upper Threshold for SAP carrier detection			08
	003	SPTL	006	015	FIX	Lower Threshold for SAP carrier detection			15
	004	C1TH	000	031	FIX	Normal Threshold for detection of SC1			00
	005	C1AP	000	031	FIX	Auto Program Threshold for detection of SC1			00
	006	SPTH	000	031	FIX	Noise Threshold for automute of SAP			00
	007	SPHY	004	015	FIX	Hysteresis size for automute of SAP			03
	008	FMTH	000	031	FIX	Noise Threshold for automute of SC2 in FM A2 standard			18
	009	FMHY	004	015	FIX	Hysteresis size for automute of SC2 in FM A2 standard			07
	010	BTTH	000	031	FIX	Noise Threshold for automute of BTSC stereo carrier			00
	011	BTHY	004	015	FIX	Hysteresis size for automute of BTSC stereo			03
	012	EJTH	000	031	FIX	Noise Threshold for automute of EIAJ FM subcarrier			00
	013	EJHY	004	015	FIX	Hysteresis size for automute of EIAJ FM subcarrier			04
	014	ONLY	000	001	FIX	Reproduce only related NICAM on DEC output			00
	015	EXAM	000	001	FIX	Fall back source in case of automute in standard L (DDEP)			00
	016	NIMT	000	001	FIX	NICAM auto mute function depend on bit error rate (DDEP)			00
	017	NILE	100	255	FIX	NICAM lower error limit (DDEP)			50
	018	NIUE	200	255	FIX	NICAM upper error limit (DDEP)			200
	019	EPMD	001	003	FIX	DEMDEC Easy Programming (DDEP)			02
	020	STDS	019	031	FIX	Bits multiplexed for ASD and SSS modes			31
	021	OVMA	001	001	FIX	FM overmodulation adaption			00
	022	FLBW	000	003	FIX	FM/AM demodulator filter bandwidth			03
	023	IDMD	000	003	FIX	FM ident speed in SSS mode			00
	024	FPAL	000	001	FIX	Line fequency for BTSC decoding			00
	025	OVMT	001	002	FIX	Overmodulation level threshold relative to nominal			03
	026	DCXI	000	001	FIX	NICAM DCXO Scaling Control Inverter			**
	027	DCXG	000	007	FIX	NICAM DCXO Scaling Control Gain			**
	028	DCLL	011	015	FIX	NICAM DCXO Scaling Control Limit (L)			00
	029	DCLH	000	031	FIX	NICAM DCXO Scaling Control Limit (H)			**
	030	IDEU	001	003	FIX	IDMOD setting for European A2 STD			00
	031	IDKR	001	003	FIX	IDMOD setting for Korean M STD			00
	032	IDJP	001	003	FIX	IDMOD setting for EIAJ STD			01

Item remarks ** please refer page 24.

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	NVM Address / Initial Value (Detailed)		
Category	No.	Name	Dec	Dec					Common	50	60
OPTM	000	ASHT	006	007	FIX	Auto shut off timer (data * 5 min)			00		
	001	OSDB	000	015	FIX	OSD brightness		MMR/Micro 60h	00		
	002	OSDH	005	015	FIX	OSD Horizontal Position		MMR/Micro 60h	05		
	003	OSDV	037	063	FIX	OSD Vertical Position	50 / 60	MMR/Micro 60h		63	31
	004	MUTE	000	001	FIX	No Signal Mute Switch (1=enabled)			00		
	005	RFUL	015	015	FIX	RF Signal Change Counter after Unlocked (Disable when 0fh)			04		
	006	RFLK	015	015	FIX	RF Signal Change Counter after Locked (Disable when 0fh)			00		
	007	AVUL	015	015	FIX	AV Signal Change Counter after Unlocked (Disable when 0Fh)			04		
	008	AVLK	015	015	FIX	AV Signal Change Counter after Locked (Disable when 0Fh)			00		
	009	LANG	000	003	FIX	OSD language shipping condition			00		
	010	HTXT	000	001	FIX	Sync seperator sw		TV-Processor(8A)	00		
	011	CMSS	000	001	FIX	Sync sw		TV-Processor(8A)	01		
	012	DCXO	060	295	FIX	DCXO Value		SFR/Micro 60h/DSP	59		
	013	EXBL	000	015	FIX	Extended Blanking Timer to Eliminate White Noise			07		
	014	TSYS	000	003	FIX	Memorize TV Sys in NVM at Test Reset [0:B/G, 1:I, 2:M, 3:D/K] (GA Model)			00		
	015	TVOU	001	001	FIX	TV out mute Condition 0: Always mute off, 1: mute without signal			00		

TVJ	Functionality		Init.	Range	DATA	Function	Table & Note	Device Name (Slave Address)	Common	Note
Category	No.	Name	Dec	Dec						
OPTB	000	IALL	000	001	FIX	Standard Write Switch (not memorized in NVM)			00	
	001	OPB1	000	255	FIX	Option 1 (System related)			*****	For remark *****
	002	OPB2	000	255	FIX	Option 2 (Video Signal related)			*****	Refer to option
	003	OPB3	000	255	FIX	Option 3 (Stereo Decoding related)			*****	Bit setting on
	004	OPB4	000	255	FIX	Option 4 (Miscellaneous)			*****	Page 25 to
	005	OPB5	000	255	FIX	Option 5 (Miscellaneous)			*****	Page 27
	006	OPB6	000	255	FIX	Option 6 (OSD Language related)			*****	

NOTE

- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory. In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

Data Variant depend on models

Category	No	Name	Model	Data	
WHBL	006	PGR	With VM	A864	69
			Without VM	A864	61
	007	PGG	With VM	A865	69
			Without VM	A865	61
	008	PGB	With VM	A866	69
			Without VM	A866	61

Category	No	Name	Model	Data	
VM	001	VMA	With VM	A87D	03
			Without VM	A87D	00

Category	No	Name	Model	Table															
				PAL (TV)		NTSC (TV)		SECAM (TV)		PAL (VIDEO)		NTSC (VIDEO)		SECAM (VIDEO)		YUV		S-Input	
YC	003	YDLY	Comb Model	A851	08	A852	08	A853	08	A8D8	11	A8DC	09	A8DD	11	A8DE	09	A8DF	09
			Non-Comb Model	A851	02	A852	02	A853	10	A8D8	2	A8DC	2	A8DD	2	A8DE	09	A8DF	09

Category	No	Name	Model	Table					
				TV		Video		YUV	
SADJ	002	SSHP	21" Comb models	A859	35	A85A	35	A898	35
			21"Non-Comb models & All 14" models	A859	35	A85A	38	A898	35

Category	No	Name	Model	Data	
PICT	001	CFA	Comb models	A86D	00
			Non-Comb models	A86D	01

Category	No	Name	Model	Data	
YC	000	PFRQ	Comb models	A86B	01
			Non-Comb models	A86B	00

Category	No	Name	Model	Table			
				NTSC		Others	
YC	011	BPS	Comb models	AAF6	01	AAF5	00
			Non-Comb models	AAF6	00	AAF5	00

Category	No	Name	NVM Address	AR21 series	BT21 (AV Stereo)	HW21 3D	AR14 series	HW21 non-3D	BM14/21 & BT21
SDSP	002	BBL	A8E6	01	00	00	01	00	00
	003	BBH	A8E6	05	00	00	04	00	00
	004	BBLW	A839	06	06	06	06	06	06
	016	BAS	A8FA	13	13	00	00	13	00
	017	TRE	A8FB	14	14	12	13	14	00
	018	EQ1	AA00	12	09	00	07	11	00
	019	EQ2	AA01	04	09	01	00	00	00
	020	EQ3	AA02	10	09	00	00	00	00
	021	EQ4	AA03	09	10	11	10	00	00
	022	EQ5	AA04	10	11	11	00	12	00
	023	BFCT	AAF9	05	00	00	05	00	00
	026	BBHW	AA23	00	00	00	00	00	00
	027	STRE	AA24	01	01	01	01	01	01

Category	No	Name	NVM Address	Stereo models	Non-stereo models
SDEC	26	DCXI	AA48	01	00
	027	DCXG	AA48	03	00
	029	DCLH	AA47	06	00

ITEM INFORMATION
No. OPB1

Item	Speed Search		M/N(US)	L'	M	B/G	I	D/K	DEC
KV-HW21M80	0	1	0	0	1	1	1	1	79
KV-HW21M83	0	1	0	0	1	1	1	1	79
KV-HW21M80J	0	1	0	0	1	1	1	1	79

SPEED SEARCH (Time of speed search) 00 = disabled (original cycle speed)
01 = 4 time speed from the original
10 = 6 time speed from the original
11 = 8 time speed from the original

TV System Selection 0 = disabled, 1 = enabled

No. OPB2

Item	D1(JPN)	AV Multi/ PAM(GA)	Component	Composite (SCART)		SECAM	Color Decording		DEC
KV-HW21M80	0	1	1	1	0	1	0	0	116
KV-HW21M83	0	1	1	1	0	1	0	0	116
KV-HW21M80J	0	1	1	1	0	1	0	0	116

D1	(D1 Terminal)	0 = not available, 1 = available
AV Multi/	(AV Multi Terminal) - JP	0 = not available, 1 = available
PAM	Portable Audio Mode - GA	0 = not available, 1 = available
Component	(Component [YCbCr] Terminals)	0 = not available, 1 = available
Composite	(No. of Composite Terminals)	00 = no composite terminal (Euro:no Scart) BX1L:No Video
(SCART)	(No. of SCART Terminals)	01 = 1 composite terminal (Euro:1 Scart) BX1L:2 Video in
		10 = 2 composite terminals (Euro:2 Scart) BX1L:3 Video in
		11 = 3 composite terminals (Euro:no terminal) BX1L:4 Video in
SECAM	(SECAM Color System)	0 = not available, 1 = available
Color decoding	(Color Crystal Selection)	00 = PAL/NTSC/SECAM (Multi)
		01 = NTSC (3.58MHz)
		10 = PAL/NTSC/SECAM (4.43MHz)
		11 = PAL/NTSC (Tri-Norma)

No. OPB3

Item	HDEV	NICAM ST	NICAM BI	A2 ST	Thai Bilingual	JP/US ST	Korean ST	MONO	DEC
KV-HW21M80	0	0	0	0	0	0	0	0	00
KV-HW21M83	0	0	0	0	0	0	0	0	00
KV-HW21M80J	0	0	0	0	0	0	0	0	00

HDEV	(High Deviation Mode)	0 = disabled, 1 = enabled
NICAM ST	(NICAM Stereo)	0 = disabled, 1 = enabled
NICAM BI	(NICAM Bilingual)	0 = disabled, 1 = enabled
A2 ST/BI	(A2 [West German] Stereo/Bilingual)	0 = disabled, 1 = enabled
Thai Bilingual	(A2 [Thai] Bilingual) or Force SAP if JP/US ST is active	0 = disabled, 1 = enabled
JP/US ST	(JP/US Stereo)	0 = disabled, 1 = enabled
Korean ST	(Korean Stereo)	0 = disabled, 1 = enabled
MONO	(Monaural Model)	0 = Stereo (SSD) Model 1 = Monuaral Model

No. OPB4

Item	Firmware/ SMAT	1 spk Models	VM	Equalizer	Surround	V-Chip	Top	Text	DEC
KV-HW21M80	1	0	0	1	0	0	0	0	144
KV-HW21M83	1	0	0	1	0	0	0	0	144
KV-HW21M80J	1	0	0	1	0	0	0	0	144

Firmware	(SSD Firmware Downloading)	0 = disabled, 1 = enabled
SMAT	Surround Matrix	0 = Active, 1 = Passive
1 spk Models	1 Speaker Models	0 = 2 or 3 Speaker Models, 1 = 1 speaker Models
VM	(Velocity Modulation)	0 = disabled, 1 = enabled
Equalizer	(5-band Equalizer Model)	0 = Bass/Treble Model, 1 = Equalizer Model
Surround	(US/GA Surround Selection)	0 = Off/Simulated/Surround 1 = Off/Simulated/WOW/TruSurround (US) 1 = Off/Simulated/SRS (3D) Surround (GA)
V-Chip	(V-Chip Model)	0 = Channel Block Model (no rating) 1 = Parental Control Model (rating)
TOP	(Forced TOP)	0 = Auto Mode (TOP/FLOF), 1 = Forced TOP
TEXT	(Teletext Model)	0 = Non-Teletext Model, 1 = Teletext Model

No. OPB5

Item	Full Surround	No Surround	Forced 60	ASD	Tilt	IP Plus	IP	Wide	DEC
KV-HW21M80	0	0	0	0	0	1	1	1	07
KV-HW21M83	0	0	0	0	0	1	1	1	07
KV-HW21M80J	0	0	0	0	0	1	1	1	07

Full Surround	(Full Surround option)	0 = Normal Surround Model 1 = Full Surround Model (Off/simulated/surround/ SRS/WOW/TruSurround)
No Surround	(No Surround Model)	0 = Surround Model, 1 = Non-Surround Model
Forced 60	(Forced 60Hz in no signal)	0 = 50Hz, 1 = 60Hz
ASD	(Automatic Standard Detection)	0 = disabled, 1 = enabled
Tilt	(Tilt Correction/PIC Rotation)	0 = disabled, 1 = enabled
IP Plus	(Intelligent Picture Plus)	0 = disabled, 1 = enabled
IP	(Intelligent Picture)	0 = disabled, 1 = enabled
Wide	(Wide Mode/V-Compressed)	0 = disabled, 1 = enabled

No. OPB6

Item	GA US	Latin	Feature 2	Feature 1	OSD Language Selection				DEC
KV-HW21M80	1	0	0	0	0	1	0	0	132
KV-HW21M83	1	0	0	0	0	1	0	0	132
KV-HW21M80J	1	0	0	0	0	1	0	0	132

GA US (US Model Destination)
0 = US/CANADA/Latin
1 = Taiwan/Korea/Philippine
(Wake-up timer enable)
(GA Surround Spec:OFF, SIMULATED, SRS)

Latin (US Model Latin Destination)
0 = US/CANADA (No Volume Figure Display)
1 = Latin (Volume Figure Display)

Feature 2 (Temporary for BX1L)
0 = Comb Not available
1 = Comb available

Feature 1 (Temporary for BX1L)
0 = PiP Not Available
1 = PiP available

OSD Language Selection
(English always available except JP)

US
01xx = French
0x1x = Spanish
0xx1 = Portuguese

US
(GA NTSC)
1x1x = Complicated Chinese
1xx1 = Korean

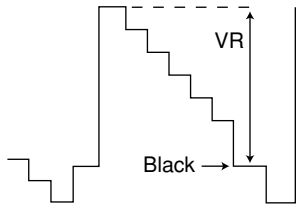
GA
1xxx = Simplified Chinese
x1xx = Arabic
xx1x = Thai
xxx1 = Vietnamese

EU
0000 = Destination ADE
0001 = Destination BL
0010 = Destination KR
0011 = Destination U

3-3. PICTURE QUALITY ADJUSTMENTS

PMX/CONTRAST ADJUSTMENT

1. Select Video Mode.
2. Input PAL CB to TV set.
3. Set PICT 03 "PWL" to 00h and WHBL 21 "BLBG" to 01h.
4. Set the following condition:
   PICTURE 100%, COLOR 0%, BRIGHTNESS 50%.
5. Connect an oscilloscope to pin ④ (R output) of CN004.
6. Set to Service Mode "PWL" to 00h, "BLBG" to 01h.
7. Select SADJ00 "PMX" with [1] and [4] of the commander then adjust VR within spec with [3] and [6].

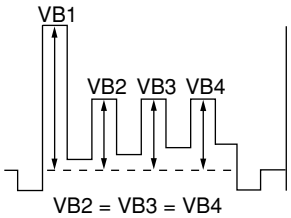


1.46 ± 0.03 Vp-p = without VM models
1.65 ± 0.03 Vp-p = with VM models

8. Then press [MUTING] → [0] to write the data
9. Set "PWL" and "BLBG" back to initial data repectively. (PWL: 01h and BLGG: 00h)

SUB COLOR ADJUSTMENT

1. Select Video and set Picture mode.
2. Input PAL 100% CB to TV set.
3. Set PICT 06 "WTS" to 00h.
4. Set the following condition:
   PICTURE 100%, COLOR 50%, BRIGHTNESS 50%.
5. Connect an oscilloscope to pin ② (B output) of CN004.
6. Select to Service Mode and adjust SADJ04 "SCOL" with [1] and [4] of commander then adjust to VB2 = VB3 = VB4 with [3] and [6].

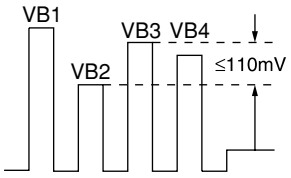


VB2 = VB3 = VB4
(Difference is within 70mV)

7. Then press [MUTING] → [0] to write the data.
8. Set "WTS" back to original data.

SUB HUE ADJUSTMENT

1. Select Video.
2. Input a NTSC 3.58 Color Bar to TV set.
3. Set the following condition:
   PICTURE 100%, COLOR 50%, BRIGHTNESS 50%
4. Connect an oscilloscope to pin ② (B output) of CN004.
5. Set to Service and adjust SADJ01 "SHUE" with [1] and [4] of commander then adjust to VB1 = VB2 = VB3 = VB4 with [3] and [6].
6. Then press [MUTING] → [0] to write the data.



The highest level of VB1, VB2, VB3, VB4 must be aligned at the same time.
The ideal difference between VB2 and VB3 is within ±110mV.

For single system with NTSC 4.43 select TV channel with NTSC 4.43 and repeat 4 → 6.

3-4. DEFLECTION ADJUSTMENT

H-TRAPEZOID ADJUSTMENT

1. Receive cross hatch/dotsignal.
2. Adjust on to make H-Trapezoid distortion best.

NORMAL MODE (50Hz)

1. Set to Service Mode.
2. Input SPCB Signal (Select Video Mode for USA).
3. Using the [1] and [4] button select GEO (Service Mode).
4. Rasie/lower data using the [3] and [6] buttons adjust the following items:-

GEOM :	000	HPOS	Horizontal Shift (HS)
	001	HPAR	Horizontal Parallelogram
	002	HBOW	Horizontal Bow
	003	VLIN	Vertical Linearity
	004	VSCR	Vertical Scroll
	005	HSIZ	EW Width (EW)
	006	EWPW	EW Parabola/Width (PW)
	007	UCOP	EW Upper Corner Parabola
	008	LCOP	EW Lower Corner Parabola
	009	EWTZ	EW Trapezium
	010	VSLP	Vertical Slope (VS)
	011	VSIZ	Vertical Amplitude
	012	SCOR	S-Correction (SC)
	013	VPOS	Vertical Shift (VSH)
	014	HBL	RGB Blanking Mode
	015	WBF	Timing of Wide Blanking (WBF)
	016	WBR	Timing of Wide Blanking (WBR)
	017	SBL	Service Blanking
	018	COPY	Copy the GEO data to all 50/60Hz NVM area

5. Write into memory by pressing [MUTING] then [0] on the remote commander.

WIDE MODE (50Hz)

(V-Compression Adjustment)

1. Input SPCB signal.
2. Adjust condition change to WIDE MODE : ON
3. Copy (Item from normal mode 50Hz) all Normal Mode adjusted data.

NORMAL MODE (60Hz)

1. Input 525/60Hz signal.
2. They can copy 50Hz first.
   ("COPY" under GEOM is set to [1], then [MUTE] + [0])
3. Using the [1] and [4] button, select category GEO (Service Mode).
4. Raise/lower data using the [3] and [6] buttons to obtain optimum image.

GEOM :	000	HPOS	Horizontal Shift (HS)
	001	HPAR	Horizontal Parallelogram
	002	HBOW	Horizontal Bow
	003	VLIN	Vertical Linearity
	004	VSCR	Vertical Scroll
	005	HSIZ	EW Width (EW)
	006	EWPW	EW Parabola/Width (PW)
	007	UCOP	EW Upper Corner Parabola
	008	LCOP	EW Lower Corner Parabola
	009	EWTZ	EW Trapezium
	010	VSLP	Vertical Slope (VS)
	011	VSIZ	Vertical Amplitude
	012	SCOR	S-Correction (SC)
	013	VPOS	Vertical Shift (VSH)
	014	HBL	RGB Blanking Mode
	015	WBF	Timing of Wide Blanking (WBF)
	016	WBR	Timing of Wide Blanking (WBR)
	017	SBL	Service Blanking
	018	COPY	Copy the GEO data to all 50/60Hz NVM area

WIDE MODE (60Hz)

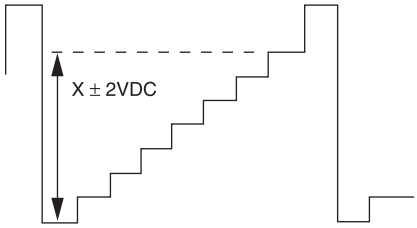
(V-Compression Adjustment)

1. Input mono scope signal.
2. Adjust condition change to WIDE MODE : ON
3. "COPY" is set to [1], then [MUTE] + [0]

3-5. DRIVE ADJUSTMENT

1. Input signal 70% Color Bar (USA)
   100% Color Bar (Other)
2. Make sure only red is active.
3. Set following condition :-
   PICTURE 100%, COLOR 0%, Other 50%
4. Select SADJ00 "PMAX" with [1] and [4] then adjust until voltage in R out X gain [recorded] = SPEC
5. Then press [MUTING] → [0] to write data.
   X±2VDC (R Cathode on C or CV board)

Model	14”	21”
GA	83.0	88.0 - Non VM Models 99.0 - VM Models

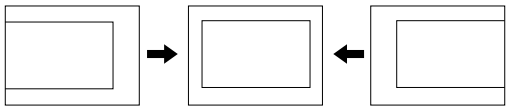


6. Set VIDP 36 BLBG back to 00.

3-6. PICTURE DISTORTION ADJUSTMENT

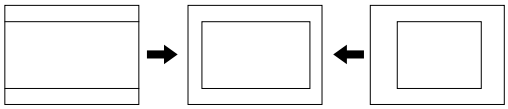
H. CENTER ADJUSTMENT (HPOS)

1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the HPOS item with 1 and 4.
4. Adjust the value of HPOS with 3 and 6 for the best vertical center.
5. Press MUTING then 0 to save into the memory.



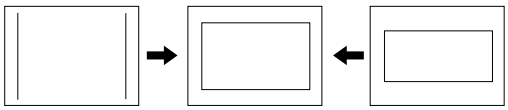
H. SIZE ADJUSTMENT (HSIZ)

1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HSIZ with 1 and 4.
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then 0 to save into the memory.



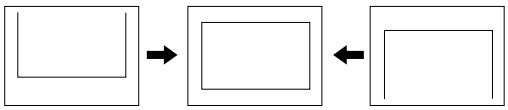
V. SIZE ADJUSTMENT (VSIZ)

1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the VSIZ item with 1 and 4.
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then 0 to save into the memory.



V. CENTER ADJUSTMENT (VPOS)

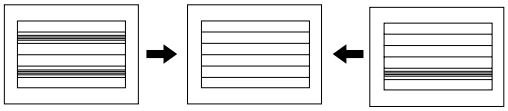
1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select the VPOS item with 1 and 4.
4. Adjust value of VPOS with 3 and 6 for the best vertical center.
5. Press MUTING then 0 to save into the memory.



V. LINEARITY (VLIN), V. CORRECTION (SCOR), PIN AMP (EWPW), AND HORIZONTAL TRAPEZOID (EWTZ) ADJUSTMENTS

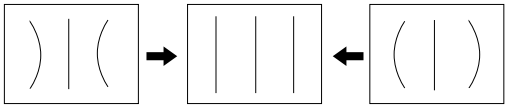
1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select VLIN, SCOR, EWPW, and EWTZ with 1 and 4.
4. Adjust with 3 and 6 for the best horizontal size.
5. Press MUTING then 0 to save into the memory.

V LINEARITY (VLIN)

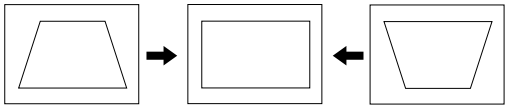


V CORRECTION (SCOR)

PIN AMP (EWPW)



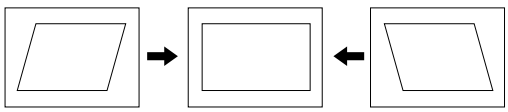
HORIZONTAL TRAPEZOID (EWTZ)



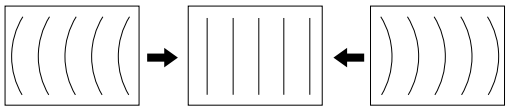
V. ANGLE (HPAR), H. BOW (HBOW), UPPER PIN (UCOP) AND LOW PIN (LCOP) ADJUSTMENTS

1. Input NTSC Monoscope signal.
2. Activate the Service Adjustment Mode.
3. Select HPAR, HBOW, UCOP, and LCOP with 1 and 4.
4. Adjust with 3 and 6 for the best picture.
5. Press MUTING then 0 to save into the memory.

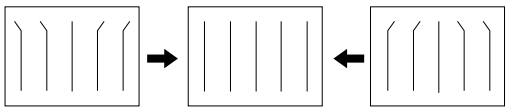
V ANGLE (HPAR)



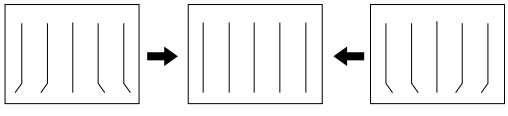
V BOW (HBOW)



UPPER PIN (UCOP)

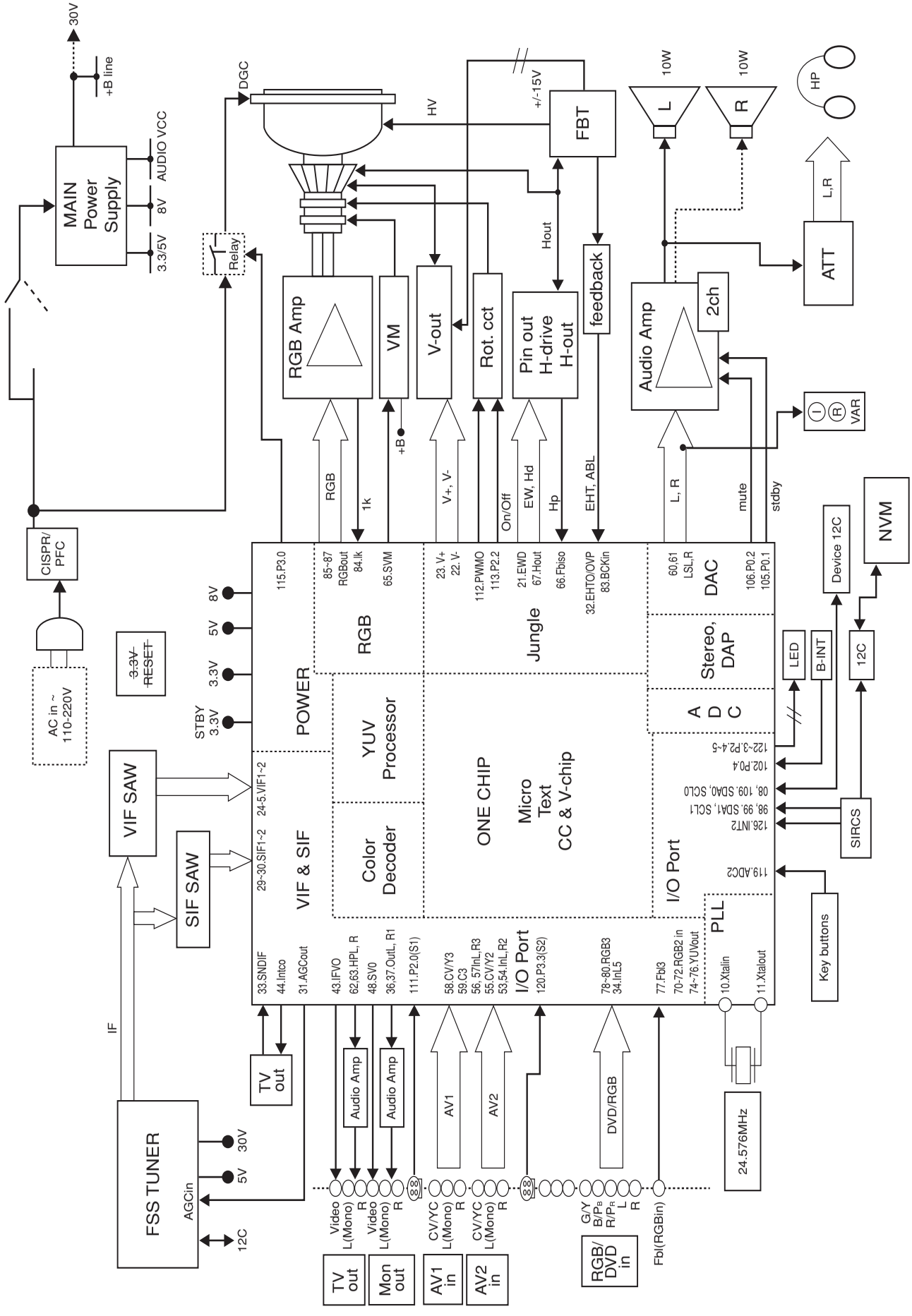


LOW PIN (LCOP)

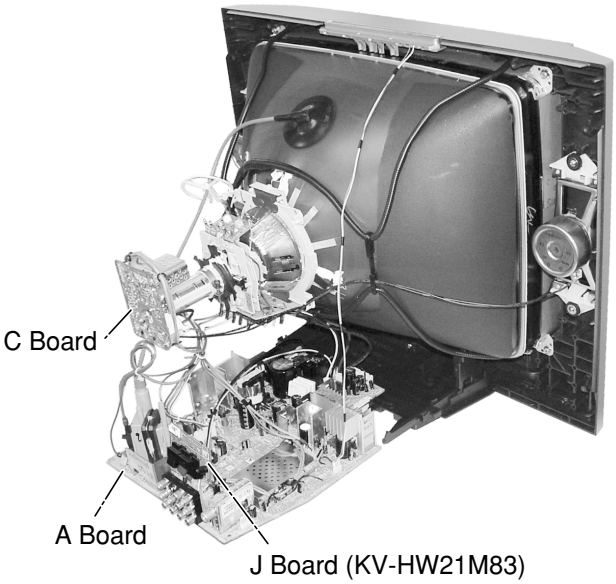


SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM



4-2. CIRCUIT BOARDS LOCATION



4-3. SCHEMATIC DIAGRAM INFORMATION

Note:

- All capacitors are in µF unless otherwise noted.
- All electrolytic capacitors are rated at 50V unless otherwise noted.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance which does not have rating electrical power is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W (CHIP: 1/10W)

- : nonflammable resistor.
- : fusible resistor
- △ : internal component.
- : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B unless otherwise noted.
- **Readings are taken with a color-bar signal input.**
  no mark : Common
  ( ) : PAL
  [ ] : NTSC 3.58
- **Readings are taken with a 10 MΩ digital multimeter.**
- **Voltage are dc with respect to ground unless otherwise noted.**
- **Voltage variations may be noted due to normal production tolerances.**
- **All voltage are in Volt.**
- **✻ : Cannot be measured.**
- **Circled numbers are waveform references.**
- **: B +bus.**
- **: B –bus.**
- **: signal path.**

Note: The reference number which starts with Wxxx (eg: W003) indicates a wire to wire connection.

Note: Components marked as XX are not fitted on this model.

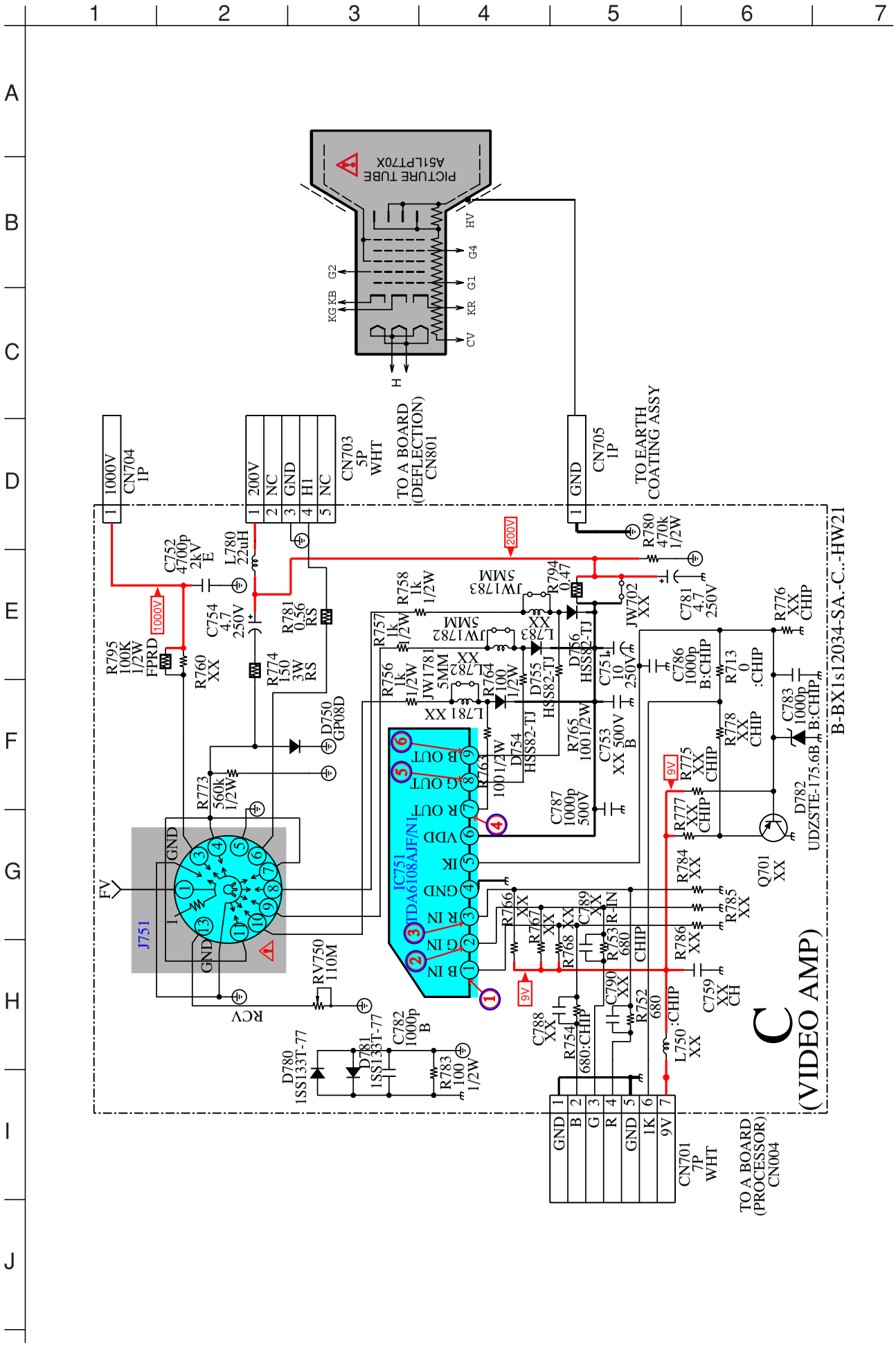
Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ✻	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The component identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

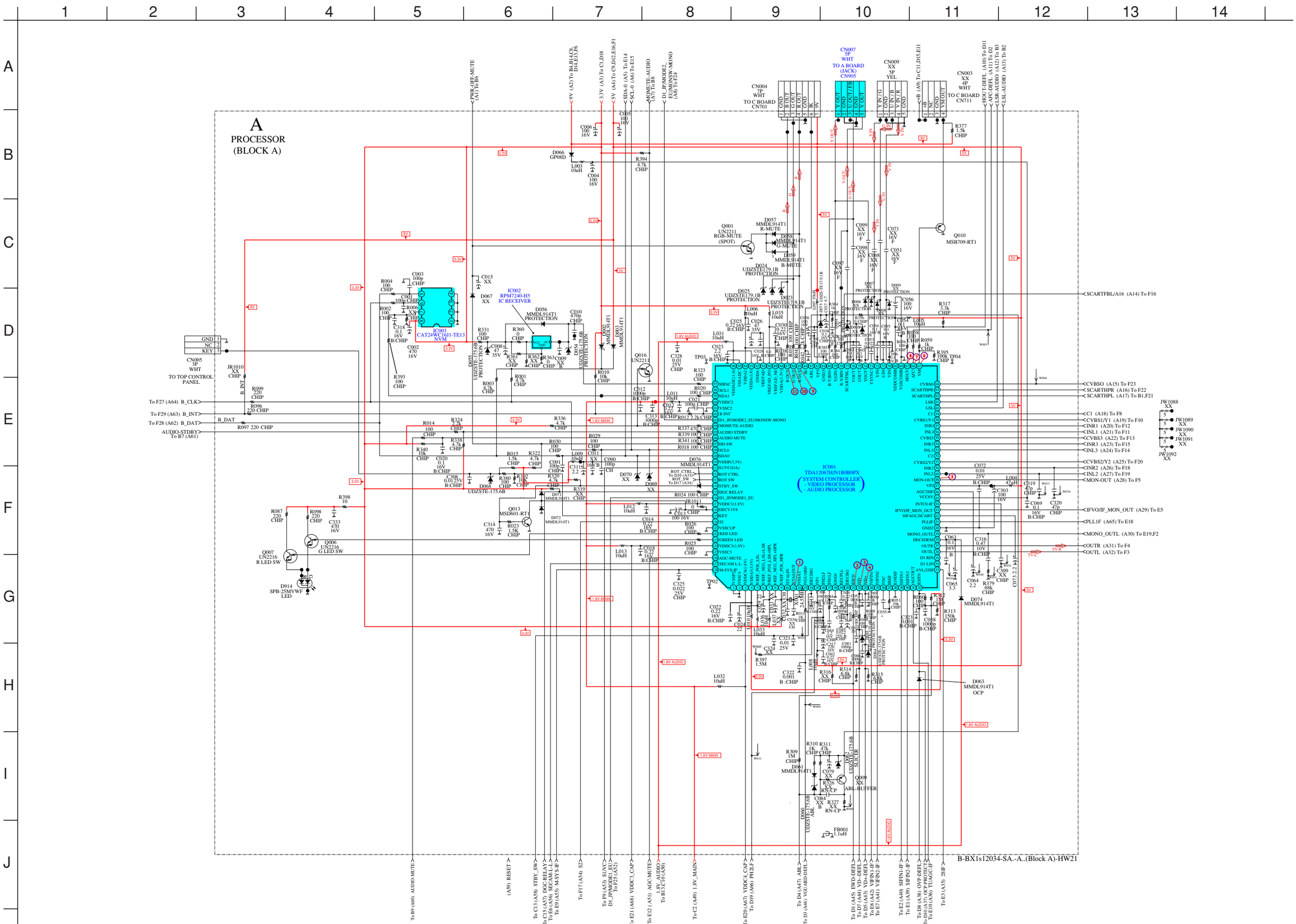
Note: "A" board schematic diagram is divided into 6 blocks. Each block is named by its function and block "alphabet". eg: Processor (Block A)
Joint connection between boards can be identified using the block alphabet followed by sequence numbering.
eg: -<HOUT-DEFL (A10) To D11
Meaning: Block A joint A10 is connected to Block D joint D11

4-3-1. C Board Schematic Diagram



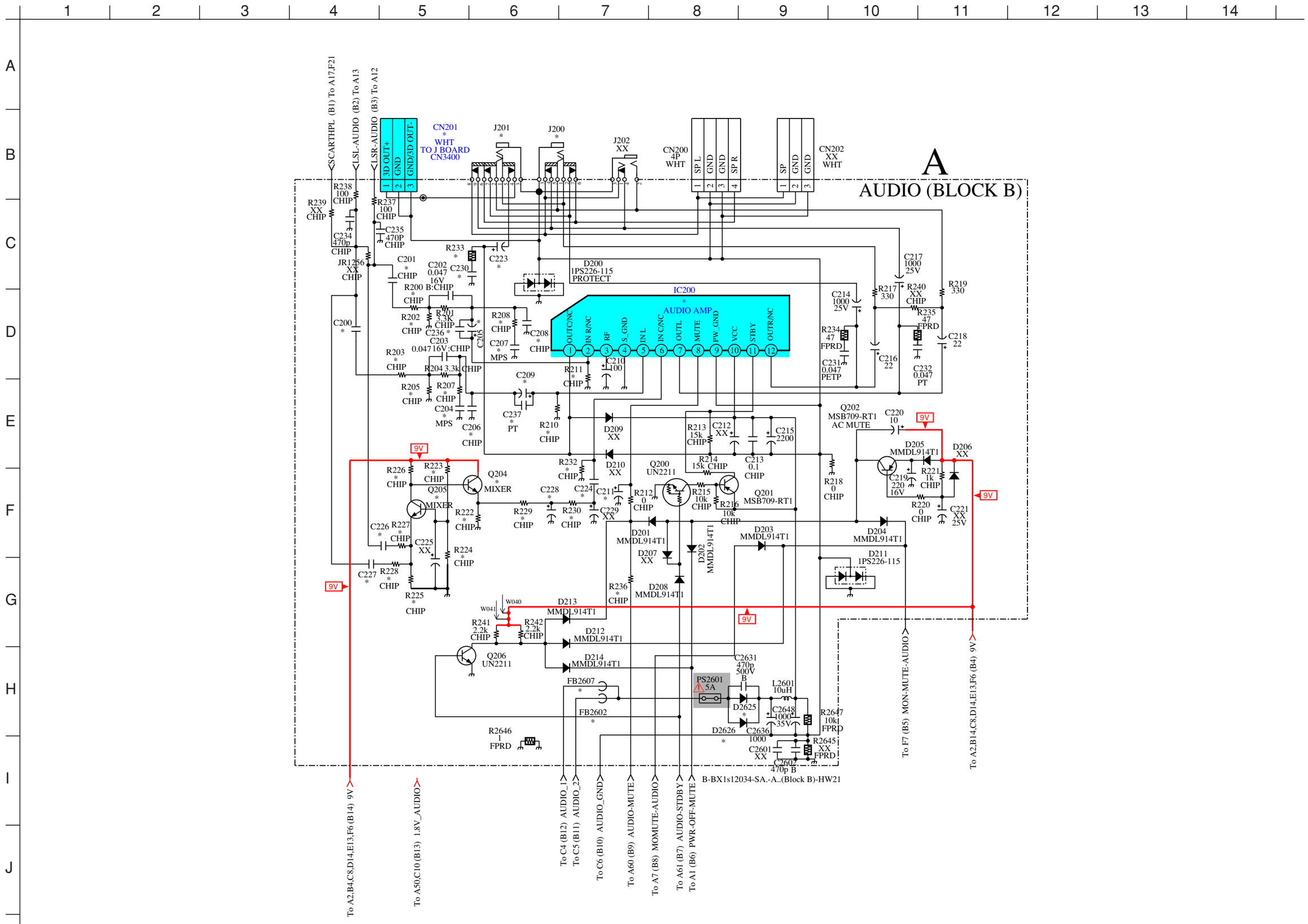
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-2. A Board — Processor (Block A)



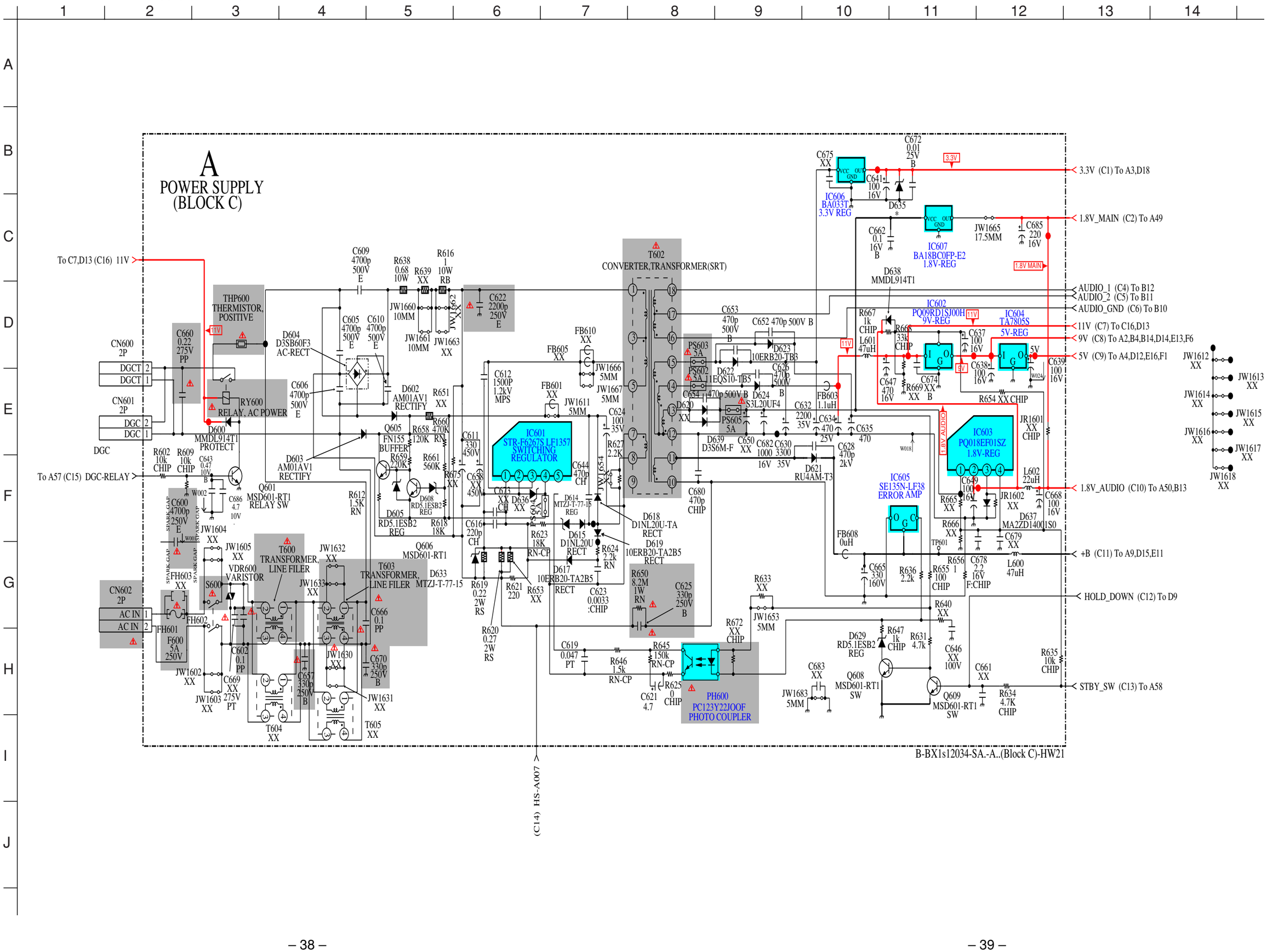
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-3. A Board — Audio (Block B)



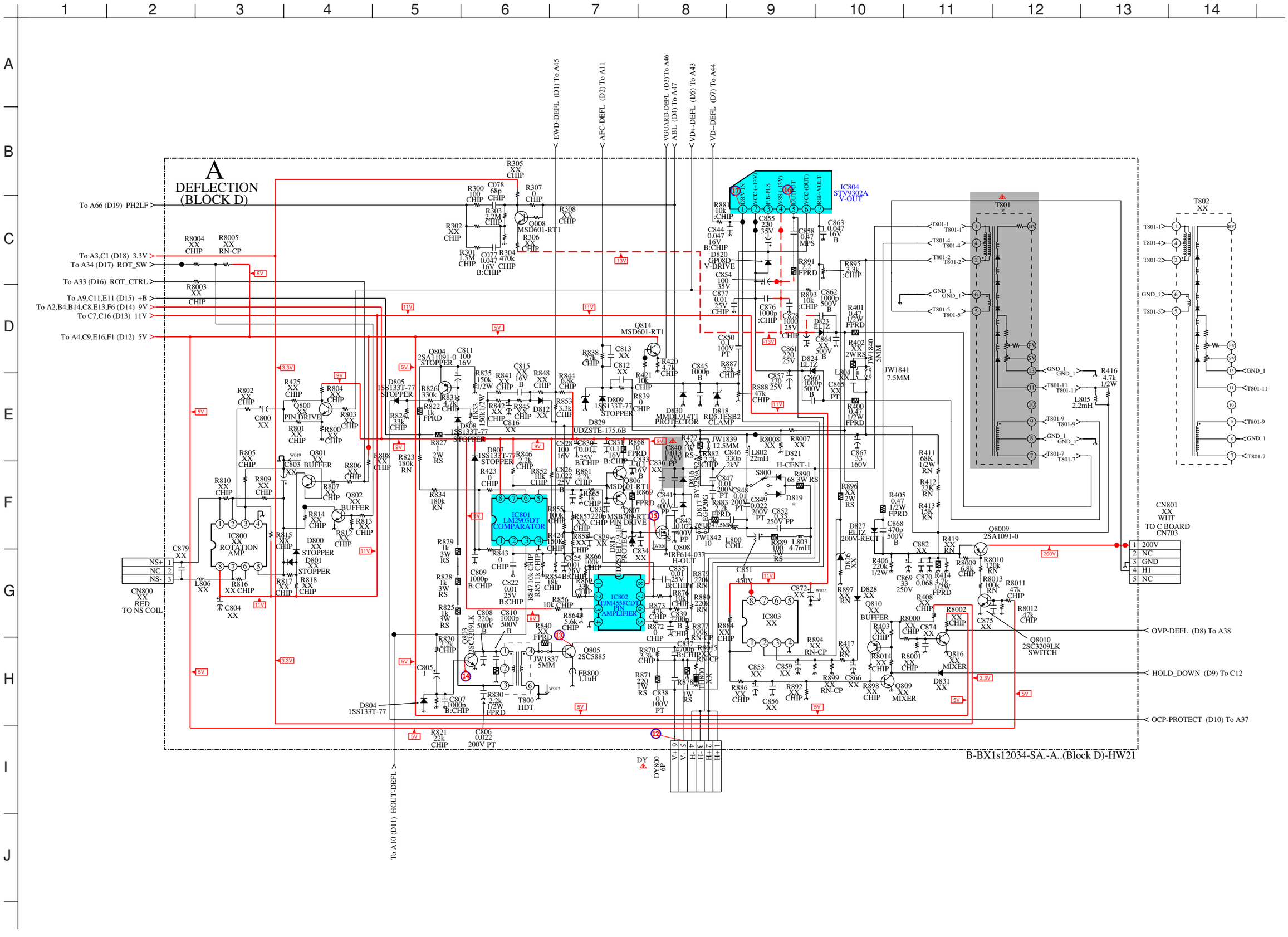
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-4. A Board — Power Supply (Block C)



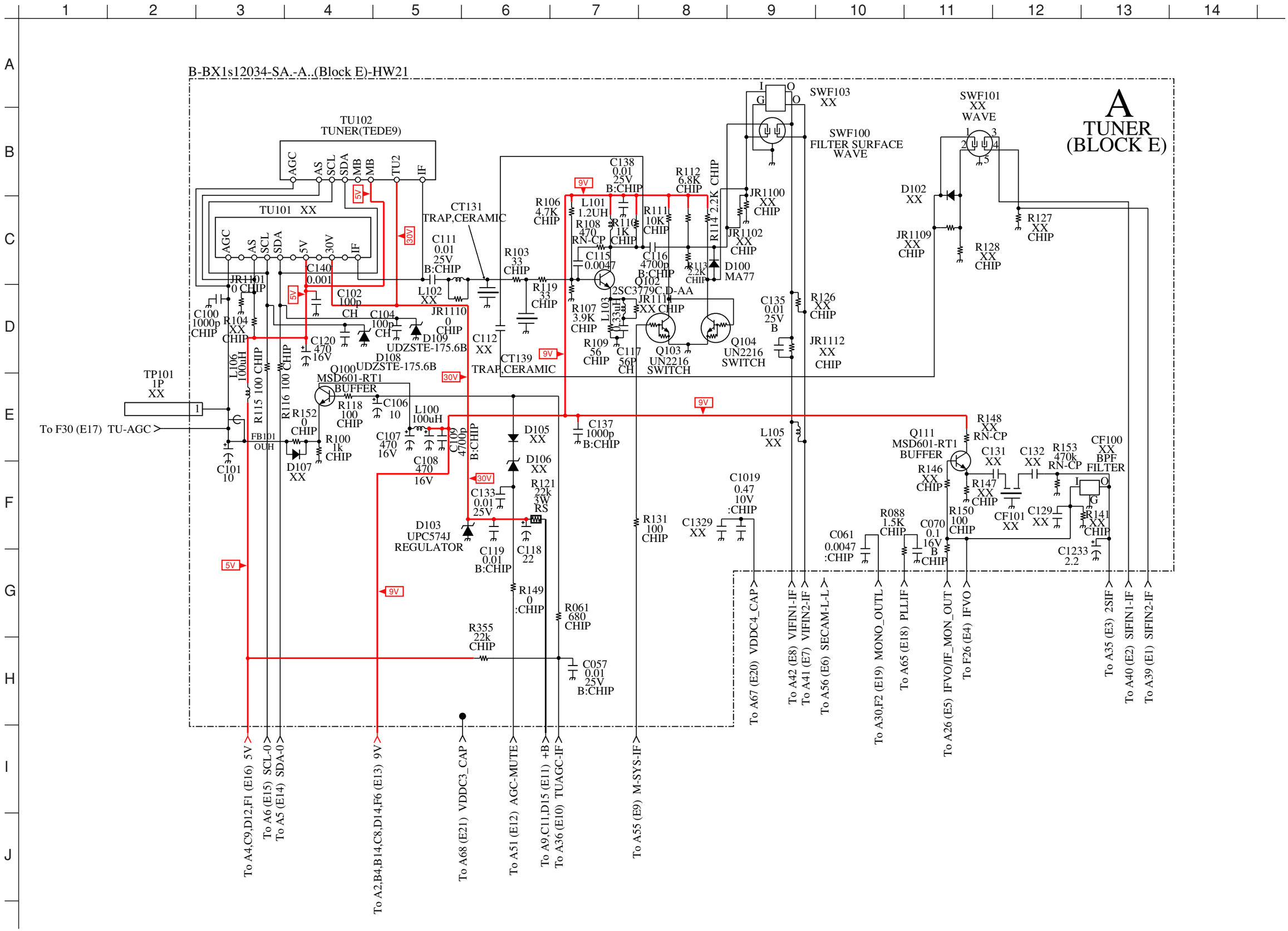
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-5. A Board — Deflection (Block D)



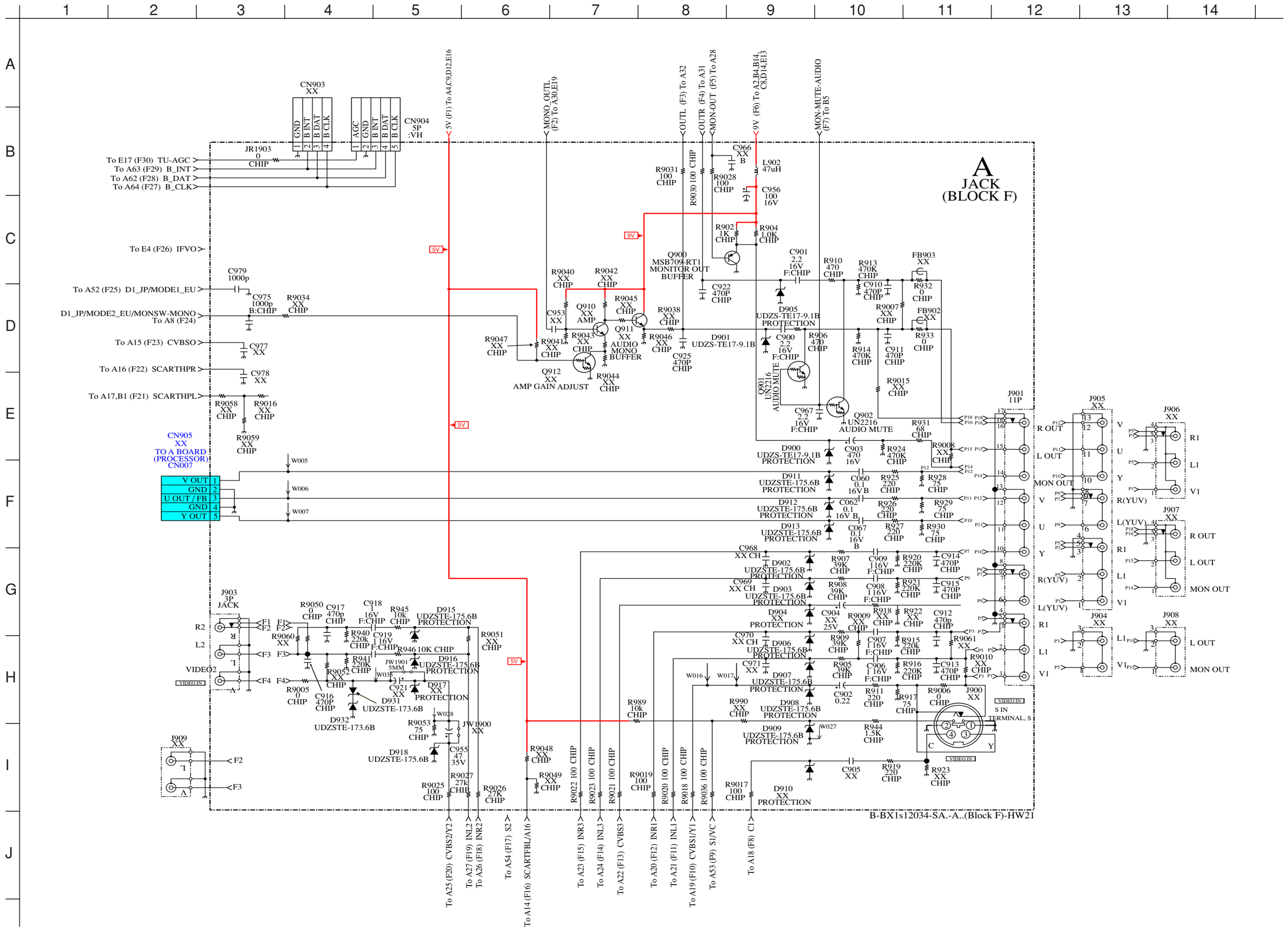
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-6. A Board — Tuner (Block E)



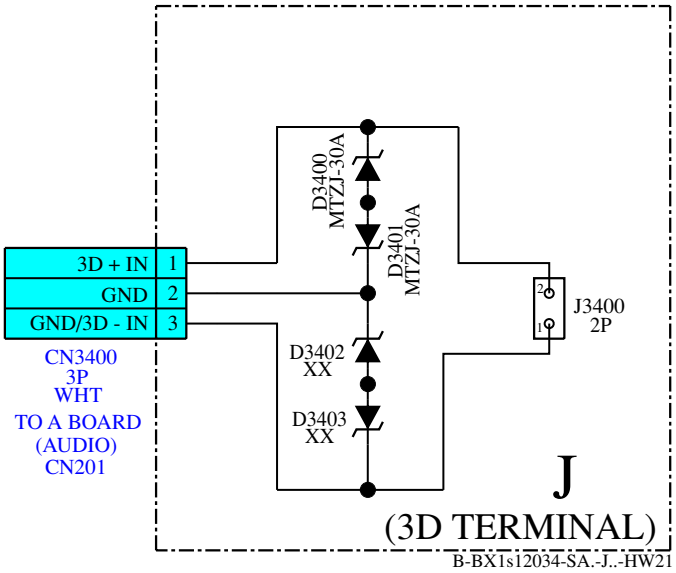
KV-HW21M80/HW21M83/HW21M80J
RM-W101

4-3-7. A Board — Jack (Block F)



4-3-8. J Board Schematic Diagrams

(KV-HW21M83)



A BOARD ✻ MARK LIST

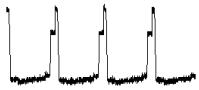
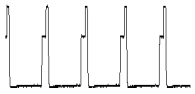
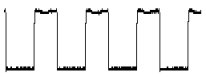
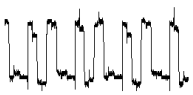
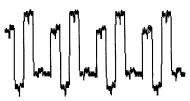
	KV-HW21M80	KV-HW21M83	KV-HW21M80J
C200	0.22 16V :CHIP	1 6.3V :CHIP	0.22 16V :CHIP
C201	0.22 16V :CHIP	1 6.3V :CHIP	0.22 16V :CHIP
C204	0.1 :PT	0.47 :PT	0.1 :PT
C205	0.47	XX	0.47
C206	0.01 25V :CHIP	0.047 16V :CHIP	0.01 25V :CHIP
C207	0.1 :PT	0.047 :PT	0.1 :PT
C208	0.01 25V :CHIP	0.047 16V :CHIP	0.01 25V :CHIP
C209	0.47	XX	0.47
C211	4.7	10	4.7
C223	XX	2200	XX
C224	XX	1 6.3V	XX
C226	XX	2.2 10V :CHIP	XX
C227	XX	2.2 10V :CHIP	XX
C228	XX	2.2 :CHIP	XX
C230	XX	0.047 :PT	XX
C236	XX	0.1 :PT	XX
C237	XX	0.1 :PT	XX
CN201	XX	3P	XX
D635	PDZ3.6B-115	PDZ3.6B-115	UDZSTE-173.6B
D819	10ERB20-TB3	10ERB20-TB3	10ERB20-TA1B2
D821	10ERB20-TB3	10ERB20-TB3	10ERB20-TA1B2
D2625	S3L20UF4	XX	S3L20UF4
D2626	XX	RN4Z	XX
FB2602	XX	1.1UH	XX
FB2607	1.1UH	XX	1.1UH
IC200	AN5276T	AN17803A	AN5276T
J200	JACK	XX	JACK
J201	XX	JACK	XX
Q204	XX	MSD601-RT1	XX
Q205	XX	MSD601-RT1	XX
R200	3.3K :RN-CP	0 :CHIP	3.3K :RN-CP
R202	5.6K :RN-CP	33K :RN-CP	5.6K :RN-CP
R203	3.3K :RN-CP	0 :CHIP	3.3K :RN-CP
R205	5.6K :RN-CP	33K :RN-CP	5.6K :RN-CP
R207	6.8K :RN-CP	3.3K :RN-CP	6.8K :RN-CP
R208	6.8K :RN-CP	3.3K :RN-CP	6.8K :RN-CP
R210	15K :RN-CP	10K :CHIP	15K :RN-CP
R211	15K :RN-CP	10K :CHIP	15K :RN-CP
R222	XX	470K :RN-CP	XX
R223	XX	10K :CHIP	XX
R224	XX	4.7K :RN-CP	XX
R225	XX	4.7K :RN-CP	XX
R226	XX	6.8K :RN-CP	XX
R227	XX	5.6K :RN-CP	XX
R228	XX	5.6K :RN-CP	XX
R229	XX	1.5K :RN-CP	XX
R230	XX	0 :CHIP	XX
R232	XX	3.3K :RN-CP	XX
R233	XX	47	XX
R236	10K	3.3K	10K
T801	NX-4751//M3A4	NX-4450//M3A4	NX-4751//M3A4

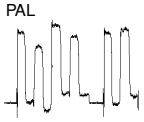
Note: The parts indicated as "XX" in this circuit diagram
are not listed here, as they are not used for these models.

4-4. VOLTAGE MEASUREMENT AND WAVEFORMS

A BOARD VOLTAGE LIST AND WAVEFORM

Ref	Pin No.	Voltage[v]
IC001	1	0
	2	0
	3	1.7
	4	3.3
	5	3.3
	6	0
	7	3.3
	8	0
	9	3.3
	10	1.4
	11	*
	12	0
	13	0.1
	14	2.5
	15	4.9
	16	(1.7)[1.8]
	17	(2.3)[2.2]
	18	0
	19	2.3
	20	2.3
	21	(3.9)[3.8]
	② 920.0mV	
	22	1.7
	③ 1.800V	
	23	1.8
	④ 2.040V	
	24	1.9
	25	1.9
	26	2.3
	27	1.9
	28	0
	29	(1.9)[0.2]
	30	(1.9)[0.2]
	31	(2.7)[2.8]
	32	0.4
	33	*
	34	2.1
	35	2.1
	36	3.2
	37	3.2
	38	2.1
	39	2.4
	40	0
	41	1.9
	42	(1.9)[1.4]
	43	(0.5)[0.4]
	44	(0.5)[0.4]
	45	8.4
	46	(1.8)[1.9]
	47	4.8
	48	1.3
	⑤ 2.160V	

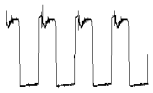
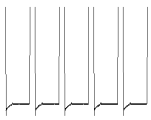
Ref	Pin No.	Voltage[v]
	49	2.2
	50	2.2
	51	1.4
	52	1.5
	53	2.1
	54	2.1
	55	1.4
	56	2.2
	57	2.2
	58	1.4
	59	1.5
	60	7.5
	61	7.4
	62	3.2
	63	3.2
	64	1.3
	65	3.3
	66	0.4
	⑦ PAL  216.0mV	
	⑦ NTSC  5.440V	
	67	1.4
	⑧  3.120V	
	68	0
	69	4.9
	70	1.2
	71	1.2
	72	1.2
	73	(1.8)[1.9]
	74	(1.8)[1.7]
	75	1.2
	76	0
	77	4.9
	78	1.2
	79	1.2
	80	1.2
	81	0
	82	4.9
	83	(2.2)[2.3]
	84	3.2
	85	1.6
	⑨ PAL  2.240V	
	⑨ NTSC  2.480V	

Ref	Pin No.	Voltage[v]
	86	1.5
	⑩ 1.960V	
	87	(1.4)[1.5]
	⑪ PAL  1.860V	
	⑪ NTSC 1.680V	
	88	3.3
	89	0
	90	3.3
	91	1.6
	92	0
	93	1.7
	94	3.3
	95	0
	96	1.7
	97	3
	98	0.4
	99	3.3
	100	1.7
	101	0
	102	3.3
	103	0
	104	2.4
	105	2.7
	106	0
	107	3.3
	108	4.4
	109	3.6
	110	3.3
	111	4.9
	112	0
	113	0
	114	0.4
	115	0
	116	0.4
	117	1.7
	118	1.7
	119	2.8
	120	(0.5)[0.4]
	121	0
	122	0
	123	3.3
	124	1.7
	125	0
	126	3.3
	127	3.3
	128	0
IC002	I	(3.1)[3.3]
	G	0
	O	3
IC003	1	0
	2	0
	3	0
	4	0
	5	3.6
	6	4.4
	7	0
	8	3.3

A BOARD VOLTAGE LIST AND WAVEFORM

Ref	Pin No.	Voltage[v]
IC200	1	10.9
	2	0
	3	(23)[23.1]
	4	0
	5	0
	6	0
	7	(11.3)[11.4]
	8	0.5
	9	0
	10	23.9
	11	10.4
	12	11.2
IC601	1	0.5
	2	0
	3	(0.3)[0.2]
	4	19.8
	5	2.8
IC602	I	10.3
	G	0
	O	8.9
IC603	I	3.2
	G	0
	O	1.7
IC604	I	8.9
	G	5
	O	0
IC605	1	134.4
	2	21.7
	3	0
IC606	1	24.3
	2	0
	3	3.3
IC607	1	3.2
	2	0
	3	3.2
	4	1.2
	5	1.7
IC800	1	0
	2	*
	3	*
	4	*
	5	*
	6	*
	7	*
	8	*
IC801	1	2.2
	2	0.8
	3	1.5
	4	0
	5	(2.7)[2.8]
	6	2.2
	7	5.9
	8	8.9
IC802	1	2.9
	2	3.2
	3	3.2
	4	0
	5	3.1
	6	3.1
	7	4
	8	8.9
IC803	1	*
	2	*
	3	*
	4	0
	5	*
	6	*
	7	*
	8	10.3

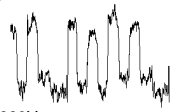
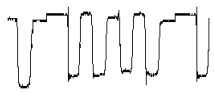
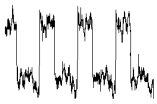
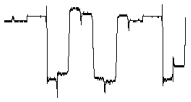
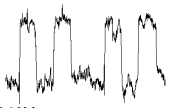
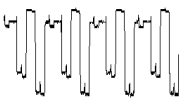
Ref	Pin No.	Voltage[v]
IC804	1	0.4
	17 PAL 664.0mVp-p	
	17 NTSC 744.0mVp-p	
	2	13.5
	3	(–12.3)[–11.9]
	4	–13.5
	5	20.1
	16 51.2Vp-p	
	6	(13.7)[13.9]
	7	0.4
PH600	1	24
	2	23
	3	0
	4	2.5
Q001	B	0
	C	(2.5)[2.4]
	E	0
Q006	B	0
	C	3.2
	E	0
Q007	B	0
	C	3.3
	E	0.2
Q008	B	(0.1)[–0.1]
	C	0
	E	0
Q009	B	*
	C	*
	E	(2.3)[2.2]
Q010	B	3.4
	C	0
	E	4
Q012	B	*
	C	*
	E	0
Q015	B	3.3
	C	2
	E	1.9
Q016	B	2.5
	C	0
	E	0
Q100	B	(2.8)[2.7]
	C	8.9
	E	(2.2)[2.1]
Q102	B	3.2
	C	2.4
	E	8.8
Q103	B	*
	C	1.7
	E	0
Q104	B	3.2
	C	0
	E	0
Q200	B	1.9
	C	0
	E	0

Ref	Pin No.	Voltage[v]
Q201	B	23.2
	C	23.9
	E	(24)[23.9]
Q202	B	8.9
	C	–0.3
	E	8.8
Q204	B	5.5
	C	8.9
	E	4.8
Q205	B	2.7
	C	5.5
	E	(0.2)[2.2]
Q601	B	0
	C	10.4
	E	0
Q605	B	23.3
	C	0.2
	E	22.8
Q606	B	*
	C	23.3
	E	19.9
Q608	B	0
	C	20.4
	E	0
Q609	B	0.6
	C	0
	E	0
Q800	B	*
	C	*
	E	0
Q801	B	*
	C	*
	E	0
Q803	B	0
	14  1.440V	
	C	0
	E	0
Q804	B	(133.3)[133.4]
	C	0
	E	133.5
Q805	B	0
	C	137.4
	13  314.0V	
	E	0
Q806	B	5.9
	C	8.9
	E	5.6
Q807	B	5.9
	C	0
	E	5.6
Q808	S	0
	G	5.6
	15 9.400V	
	D	(9.8)[10.1]

A BOARD VOLTAGE LIST AND WAVEFORM

Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]
Q809	B	*	Q911	B	*
	C	*		C	8.9
	E	0		E	*
Q814	B	0	Q8009	B	197
	C	4.9		C	198.3
	E	0.1		E	198.5
Q900	B	1.3	Q8010	B	0.5
	C	0		C	0
	E	2		E	0
Q901	B	–0.1	DY800	⑫ 1.320V	
	C	0			
	E	0			
Q902	B	–0.1			
	C	0			
	E	0			

C BOARD VOLTAGE LIST AND WAVEFORM

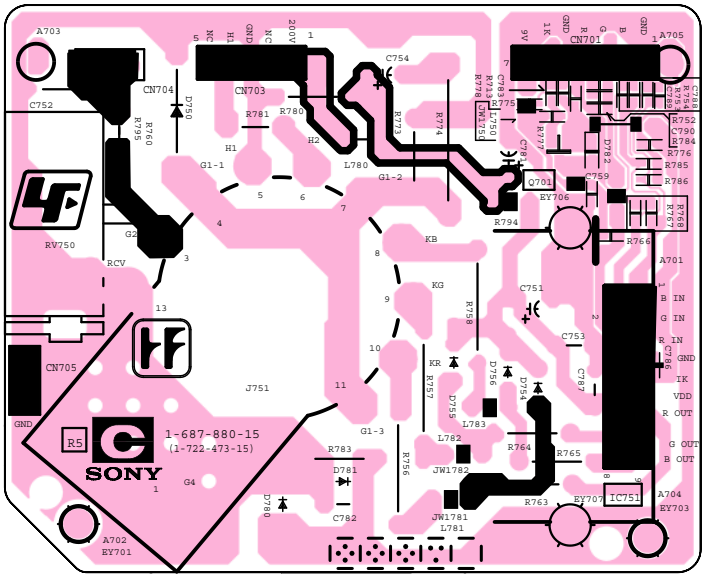
Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]
IC751	1	1.7		4	0		9	(146.5)[134.1]
	①  1.660V			5	4.6		⑥  102.0V	
	2	1.7		6	197.6			
	②  1.800V			7	(138.6)[144.4]	J751	4	(0)
	3	1.8		④ PAL  128.0V			5	(0)
	③  1.840V			④ NTSC  126.0V			6	(0)
							7	(0)
							8	(151)[145]
				8	(145.1)[149.1]		9	(149)[147]
				⑤ 110.0V			10	(141.5)[139.5]
						Q701	B	(4.7)[4.6]
							C	0
							E	0

4-5. PRINTED WIRING BOARDS AND PARTS LOCATION

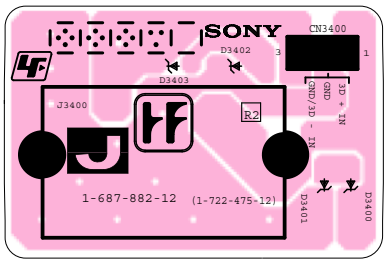
PRINTED WIRING BOARDS

C [VIDEO AMP] **J** [3D TERMINAL]

– C Board –



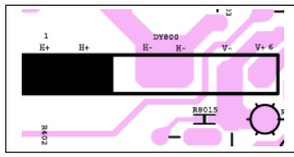
– J Board – (KV-HW21M83)



KV-HW21M80/HW21M83/HW21M80J
RM-W101

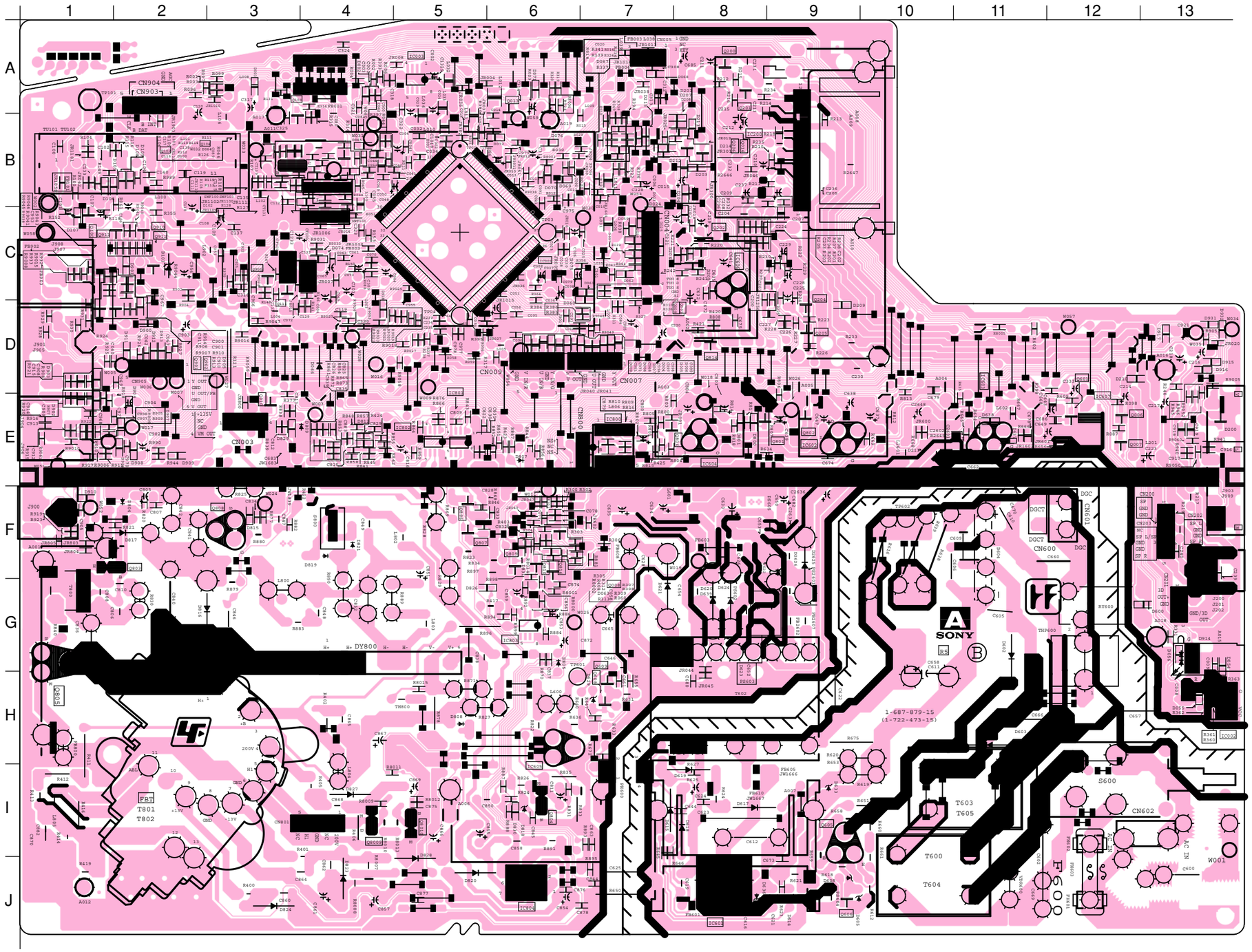
PRINTED WIRING BOARDS

A [Processor, Audio, Power Supply, Deflection, Tuner, Jack]



NOTE:
The circuit indicated at left contains high voltage of over 1220 Vp-p. Please pay attention when inspecting or repairing it to prevent an electric shock.

– A Board –

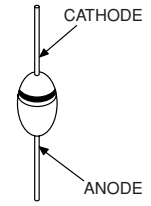
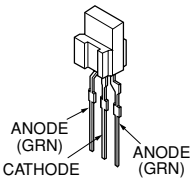
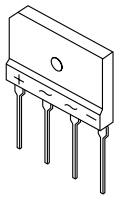
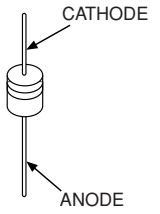


A BOARD

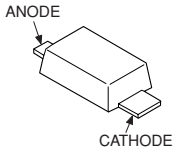
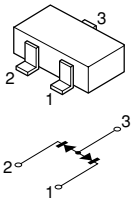
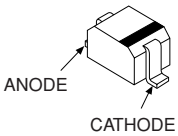
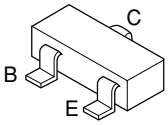
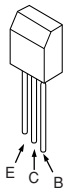
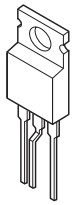
IC					
IC001	C-6	Q912	C-2	D604	F-11
IC002	H-13	Q8009	I-4	D605	J-9
IC003	A-5	Q8010	I-5	D608	J-9
IC200	B-8	**DIODE**		D614	J-9
IC601	J-8	D002	A-4	D615	I-7
IC602	E-9	D003	A-3	D617	I-8
IC603	D-11	D004	D-7	D618	I-8
IC604	E-8	D005	D-8	D619	I-8
IC605	I-6	D006	D-8	D620	G-8
IC606	C-8	D007	D-7	D621	G-7
IC607	E-12	D008	D-7	D622	F-9
IC800	E-7	D009	D-7	D623	H-8
IC801	E-5	D023	B-7	D624	G-8
IC802	E-5	D024	B-7	D625	F-9
IC803	G-6	D025	C-7	D626	F-9
IC804	J-6	D054	G-13	D629	H-7
PH600	I-7	D055	H-13	D633	I-9
TRANSISTOR		D056	G-13	D635	C-8
Q001	D-8	D057	C-7	D636	J-8
Q006	E-12	D058	C-7	D637	E-11
Q007	E-12	D059	C-7	D638	E-11
Q008	G-7	D060	D-6	D639	G-8
Q009	D-8	D061	C-7	D800	E-8
Q010	D-3	D062	C-7	D801	E-8
Q013	A-6	D063	G-7	D804	F-2
Q016	B-8	D064	B-2	D805	G-6
Q100	C-1	D065	B-3	D807	E-6
Q102	B-2	D066	D-4	D808	H-5
Q103	A-3	D067	A-7	D809	E-4
Q104	B-2	D068	A-7	E812	E-4
Q111	D-3	D069	B-6	D815	F-3
Q200	A-8	D070	B-6	D816	G-2
Q201	A-8	D071	A-6	D817	F-2
Q202	C-8	D072	A-6	D818	I-6
Q204	D-9	D074	C-4	D819	F-4
Q205	D-9	D075	C-6	D820	J-5
Q206	B-8	D100	B-2	D821	F-4
Q601	D-12	D102	B-2	D823	J-4
Q605	I-9	D103	C-2	D824	J-3
Q606	J-9	D105	B-2	D826	G-5
Q608	H-7	D106	B-1	D827	I-4
Q609	G-7	D107	C-1	D828	J-5
Q800	E-8	D108	B-2	D829	E-3
Q801	E-9	D109	B-2	D830	I-6
Q802	E-9	D200	E-13	D831	F-6
Q803	F-2	D201	B-8	D900	D-2
Q804	I-6	D202	C-8	D901	C-2
Q805	H-1	D203	B-8	D902	E-1
Q806	F-5	D204	B-8	D903	D-1
Q807	F-5	D205	C-8	D904	D-2
Q808	F-3	D206	C-7	D905	D-3
Q809	F-6	D207	B-8	D906	E-2
Q810	F-6	D208	B-7	D907	E-2
Q814	D-8	D209	D-9	D908	E-2
Q816	F-6	D210	D-12	D909	E-2
Q900	C-3	D211	E-10	D910	F-1
Q901	D-2	D212	B-7	D911	D-2
Q902	D-2	D213	B-8	D912	D-2
Q910	C-2	D214	B-7	D913	D-2
Q911	C-1	D600	G-13	D914	G-13
		D602	G-11	D915	D-13
		D603	H-11	D916	D-13
				D917	D-13
				D918	C-4

4-6. SEMICONDUCTORS

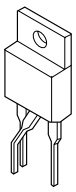
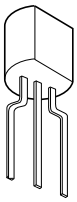
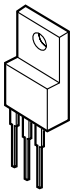
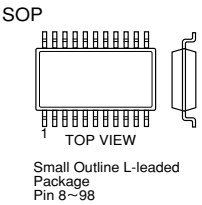
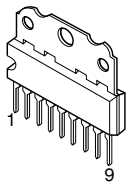
DIODE

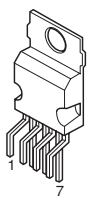
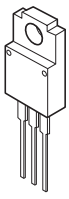
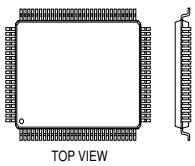
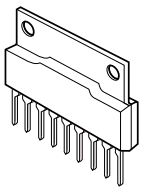
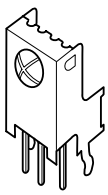
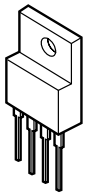
					
BY228/A52A	SPB-25MVWF	D3SB60F3	HSS82-TJ MTZJ-T-77-15 RD5.1ESB2 1SS133T-77	AM01AV1 D1NL20U D3S6M-F EGP20G EL1Z GP08D RU4AM-T3 S3L20UF4	10ERB20-TA2B5 10ERB20-TB3 11EQS10-TB5

TRANSISTOR

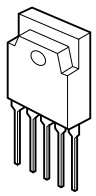
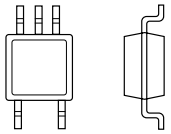
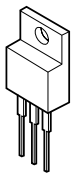
					
MA2ZD14001S0 MA77 UDZSTE-175.6B UDZSTE-179.1B	1PS226-115	MMDL914T1	MSB709-RT1 MSD601-RT1 UN2211 UN2216 2SD601A-Q-TX	2SC3209LK	IRF614-037

IC

					
FN155	2SA1091-O 2SC3779C,D-AA	2SC5885	CAT24WC16J1-TE13 LM2903DT TJM4558CDT		TDA6108AJF/N1

					
STV9302A	BA033T TA7805S	TDA12067H/ N1B0B0PX	AN17803A	RPM7240-H5	PQ018EF01SZH PQ09RD1SJOOH

IC

	 TOP VIEW	
STR-F6267S LF1357	BA18BCOFP	SE135N-LF38

SECTION 5
EXPLODED VIEWS

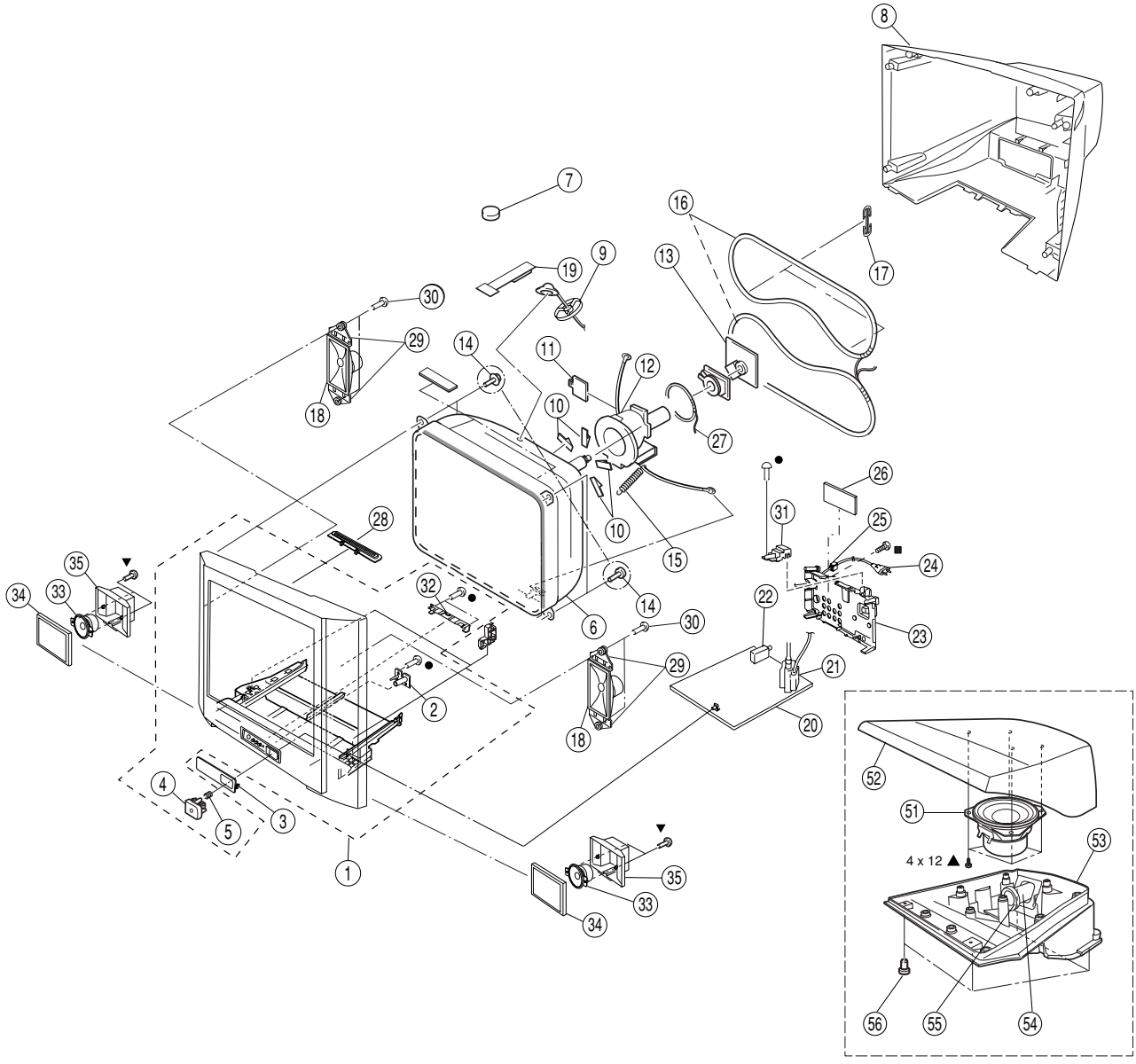
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CHASSIS

● : 7-685-648-79 SCREW +BVTP 3 × 12 TYPE2 IT-3
■ : 7-685-663-71 SCREW +BVTP 4 × 16 TYPE2 IT-3



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4041-708-2	BEZNET ASSY (KV-HW21M80/M83)	2, 4, 5, 31
		X-4042-388-1	BEZNET ASSY (KV-HW21M80J)	
2	*	4-092-367-01	GUIDE LIGHT	
3		4-093-772-01	CONTROL DOOR	
4		4-092-366-01	BUTTON POWER	
5		4-036-405-11	SPRING COMPRESSION	
6	⚠	8-738-809-05	PICTURE TUBE (A51LPT70X)	
7		1-452-032-00	MAGNET DISC	
8	⚠	4-093-770-01	REAR COVER (■ 8 SCREWS)	
9		4-084-918-01	HOLDER HV CABLE	
10		4-046-600-11	SPACER DY	
11		4-057-714-01	PIECE TLH CONVERGENCE	
12	⚠	8-451-505-21	DEFLECTION YOKE (Y21RSA-O)	
13	*	A-1405-156-A	MOUNTED PWB (VAR), C (KV-HW21M80/M83)	
	*	A-1410-404-A	MOUNTED PWB (VAR), C (KV-HW21M80J)	
14		4-057-862-01	SCREW, TAPPING 5 + CROWN WASHER	
15		4-095-706-01	SPRING EXTENSION	
16	⚠	1-456-280-11	DEGAUSSING COIL	
17		4-093-607-01	HOLDER DGC	
18		1-825-039-11	SPEAKER (15 X 6.5CM)	
19		4-094-690-01	PIECE A (90) CONV. CORRECT (KV-HW21M80/M83)	
		4-051-736-21	PIECE A (90) CONV. CORRECT (KV-HW21M80J)	
20	*	A-1302-429-A	COMPLETE PWB, A (KV-HW21M80)	
	*	A-1302-363-A	COMPLETE PWB, A (KV-HW21M83)	
	*	A-1302-617-A	COMPLETE PWB, A (KV-HW21M80J)	

REF. NO.		PART NO.	DESCRIPTION	REMARK
21	⚠	1-453-329-41	TRANSFORMER ASSY FLYBACK (NX-4751//M3A4)(KV-HW21M80/M80J)	
	⚠	1-453-309-21	TRANSFORMER ASSY FLYBACK (NX-4450//M3A4)(KV-HW21M83)	
22		1-693-636-11	TUNER (TEDE 9)	
23	*⚠	4-095-890-21	BRACKET TERMINAL (ICON) (KV-HW21M80/M80J)	
	*⚠	4-095-890-01	BRACKET TERMINAL (ICON) (KV-HW21M83)	
24	⚠	1-769-609-22	CORD, POWER (WITH CONNECTOR)	
25	⚠	4-022-115-12	HOLDER AC CORD (KV-HW21M80/M83)	
	⚠	4-022-115-01	HOLDER AC CORD (KV-HW21M80J)	
26	*	A-1405-802-A	MOUNTED PWB, J (KV-HW21M83)	
27		1-477-678-32	TOP SWITCH BLOCK	
28	*	4-046-981-03	BRACKET, SPEAKER	
29		4-095-941-01	SCREW (WH DIA.16) (+P4 X 16)	
30	*	4-092-370-02	BRACKET, FBT	
31	*	4-093-771-01	COVER, FRONT PANEL	
32	*	4-374-745-11	CUSHION A (KV-HW21M80J)	
51		1-825-352-12	LOUD SPEAKER (10CM) (KV-HW21M83)	
52	*	4-093-711-01	3D BOX, TOP (KV-HW21M83)	
53	*	4-093-712-01	3D BOX, BOTTOM (KV-HW21M83)	
54	*	4-093-713-01	SPEAKER DUCT (KV-HW21M83)	
55	*	4-096-279-01	CUSHION, DUCT (125x5) KV-HW21M83)	
56	*	4-068-528-01	FOOT (KV-HW21M83)	

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SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- MF : µF, PF : µµF

COILS
- MMH : mH, UH : µH

REF NO.	PART NO.	DESCRIPTION	REMARK
	* A-1302-429-A	COMPLETE PWB, A (KV-HW21M80)	
	* A-1302-363-A	COMPLETE PWB, A (KV-HW21M83)	
	* A-1302-617-A	COMPLETE PWB, A (KV-HW21M80J)	
		**********	
	4-382-854-01	SCREW (M3X8), P, SW (+)	
	4-382-854-21	SCREW (M3X14), P, SW (+)	
A015	4-055-304-01	HOLDER, LED	
A016	4-042-408-02	PIN, COATING LEAD	
A018	4-042-408-02	PIN, COATING LEAD	

COMMON PARTS LIST

<CAPACITOR>

C001	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C002	1-126-935-11	ELECT	470UF	20%	16V
C003	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C004	1-126-933-11	ELECT	100UF	20%	16V
C005	1-126-933-11	ELECT	100UF	20%	16V
C006	1-126-933-11	ELECT	100UF	20%	16V
C008	1-126-947-11	ELECT	47UF	20%	35V
C010	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C012	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C013	1-126-933-11	ELECT	100UF	20%	16V
C014	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C018	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C020	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C021	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C022	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C023	1-164-505-11	CERAMIC CHIP	2.2UF		16V
C024	1-126-965-91	ELECT	22UF	20%	50V
C025	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C026	1-126-947-11	ELECT	47UF	20%	35V
C028	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C029	1-126-965-91	ELECT	22UF	20%	50V
C030	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C036	1-126-933-11	ELECT	100UF	20%	16V
C037	1-126-963-11	ELECT	4.7UF	20%	50V
C038	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C041	1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C042	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C044	1-164-505-11	CERAMIC CHIP	2.2UF		16V
C046	1-162-969-11	CERAMIC CHIP	0.0068UF	10%	25V
C048	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C049	1-164-227-11	CERAMIC CHIP	0.022UF	10%	25V
C050	1-126-964-11	ELECT	10UF	20%	50V
C052	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C053	1-164-227-11	CERAMIC CHIP	0.022UF	10%	25V
C054	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V

REF NO.	PART NO.	DESCRIPTION			REMARK
C055	1-100-829-31	CAP, PP FILM (S)	0.15MF		
C056	1-126-933-11	ELECT	100UF	20%	16V
C057	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C058	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C060	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C061	1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C062	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C063	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C064	1-126-961-11	ELECT	2.2UF	20%	50V
C065	1-126-962-11	ELECT	3.3UF	20%	50V
C067	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C069	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C070	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C072	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C073	1-126-961-11	ELECT	2.2UF	20%	50V
C077	1-165-176-11	CERAMIC CHIP	0.047UF	10%	16V
C078	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C080	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C081	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C089	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C090	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C091	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C092	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C093	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C094	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C095	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C096	1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C100	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C101	1-126-964-11	ELECT	10UF	20%	50V
C102	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C104	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C106	1-126-964-11	ELECT	10UF	20%	50V
C107	1-126-935-11	ELECT	470UF	20%	16V
C108	1-126-935-11	ELECT	470UF	20%	16V
C109	1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C111	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C115	1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C116	1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C117	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C118	1-126-965-91	ELECT	22UF	20%	50V
C119	1-163-021-91	CERAMIC CHIP	0.01UF	10%	50V
C120	1-126-935-11	ELECT	470UF	20%	16V
C133	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C135	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C137	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C138	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C140	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C202	1-165-176-11	CERAMIC CHIP	0.047UF	10%	16V
C203	1-165-176-11	CERAMIC CHIP	0.047UF	10%	16V
C210	1-126-968-11	ELECT	100UF	20%	50V

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REF NO.		PART NO.	DESCRIPTION		REMARK	
C213		1-115-339-11	CERAMIC CHIP	0.1UF	10%	50V
C214		1-126-942-61	ELECT	1000UF	20%	25V
C215		1-128-550-11	ELECT	2200UF	20%	50V
C216		1-126-965-91	ELECT	22UF	20%	50V
C217		1-126-942-61	ELECT	1000UF	20%	25V
C218		1-126-965-91	ELECT	22UF	20%	50V
C219		1-126-934-11	ELECT	220UF	20%	16V
C220		1-126-964-11	ELECT	10UF	20%	50V
C231		1-137-374-11	MYLAR	0.047UF	5%	50V
C232		1-137-374-11	MYLAR	0.047UF	5%	50V
C234		1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C235		1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C300		1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C301		1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C302		1-164-505-11	CERAMIC CHIP	2.2UF		16V
C303		1-126-933-11	ELECT	100UF	20%	16V
C304		1-126-933-11	ELECT	100UF	20%	16V
C308		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C311		1-126-961-11	ELECT	2.2UF	20%	50V
C312		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C313		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C314		1-126-935-11	ELECT	470UF	20%	16V
C316		1-125-891-11	CERAMIC CHIP	0.47UF	10%	10V
C317		1-126-934-11	ELECT	220UF	20%	16V
C318		1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C319		1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C320		1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C321		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C322		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C323		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C325		1-164-227-11	CERAMIC CHIP	0.022UF	10%	25V
C328		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C333		1-126-935-11	ELECT	470UF	20%	16V
C600	⚠	1-119-895-51	CERAMIC	4700PF	20%	250V
C602	⚠	1-131-983-11	FILM	0.1UF	10%	0V
C605		1-161-830-00	CERAMIC	0.0047UF	99%	500V
C606		1-161-830-00	CERAMIC	0.0047UF	99%	500V
C609		1-161-830-00	CERAMIC	0.0047UF	99%	500V
C610		1-161-830-00	CERAMIC	0.0047UF	99%	500V
C611		1-117-752-11	ELECT(BLOCK)	330UF	20%	450V
C612		1-117-623-11	FILM	1500PF	3%	1.2KV
C616		1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C619		1-130-491-00	MYLAR	0.047UF	5%	50V
C621		1-126-963-11	ELECT	4.7UF	20%	50V
C622	⚠	1-119-894-51	CERAMIC	2200PF	20%	250V
C623		1-162-967-11	CERAMIC CHIP	0.0033UF	10%	50V
C624		1-126-948-11	ELECT	100UF	20%	35V
C625	⚠	1-127-942-51	CERAMIC	330PF	10%	250V
C626		1-102-228-00	CERAMIC	470PF	10%	500V
C628		1-117-768-91	CERAMIC	470PF	10%	2KV
C630		1-128-549-11	ELECT	3300UF	20%	35V
C632		1-126-953-11	ELECT	2200UF	20%	35V
C634		1-126-941-11	ELECT	470UF	20%	25V
C635		1-126-971-11	ELECT	470UF	20%	50V
C637		1-126-933-11	ELECT	100UF	20%	16V
C638		1-126-933-11	ELECT	100UF	20%	16V
C639		1-126-933-11	ELECT	100UF	20%	16V
C641		1-126-933-11	ELECT	100UF	20%	16V
C643		1-117-720-11	CERAMIC CHIP	4.7UF		10V
C644		1-164-315-11	CERAMIC CHIP	470PF	5%	50V

REF NO.		PART NO.	DESCRIPTION		REMARK	
C647		1-126-935-11	ELECT	470UF	20%	16V
C649		1-126-933-11	ELECT	100UF	20%	16V
C652		1-102-228-00	CERAMIC	470PF	10%	500V
C653		1-102-228-00	CERAMIC	470PF	10%	500V
C654		1-102-228-00	CERAMIC	470PF	10%	500V
C657	⚠	1-127-942-51	CERAMIC	330PF	10%	250V
C660	⚠	1-165-539-11	FILM	0.22UF	10%	275V
C662		1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C665		1-110-626-11	ELECT	330UF	20%	160V
C666	⚠	1-165-538-11	FILM	0.1UF	10%	0V
C668		1-126-933-11	ELECT	100UF	20%	16V
C670	⚠	1-127-942-51	CERAMIC	330PF	10%	250V
C672		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C678		1-164-505-11	CERAMIC CHIP	2.2UF		16V
C680		1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C682		1-115-466-91	ELECT	1000UF	20%	16V
C685		1-126-934-11	ELECT	220UF	20%	16V
C686		1-117-720-11	CERAMIC CHIP	4.7UF		10V
C805		1-126-960-11	ELECT	1UF	20%	50V
C806		1-106-375-12	MYLAR	0.022UF	5%	200V
C807		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C808		1-102-244-00	CERAMIC	220PF	10%	500V
C809		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C810		1-162-318-11	CERAMIC	0.001UF	10%	500V
C811		1-126-933-11	ELECT	100UF	20%	16V
C822		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C825		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C826		1-164-227-11	CERAMIC CHIP	0.022UF	10%	25V
C828		1-126-933-11	ELECT	100UF	20%	16V
C830		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C831		1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C832		1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C833		1-107-826-11	CERAMIC CHIP	0.1UF	10%	16V
C835		1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C837		1-162-968-11	CERAMIC CHIP	0.0047UF	10%	50V
C838		1-106-220-00	MYLAR	0.1UF	10%	100V
C839		1-162-966-11	CERAMIC CHIP	0.0022UF	10%	50V
C840	⚠	1-117-647-11	FILM	13000PF	3%	1.2KV
C841		1-107-846-11	FILM	0.1UF	5%	400V
C842		1-100-122-21	FILM	0.022UF	5%	400V
C844		1-165-176-11	CERAMIC CHIP	0.047UF	10%	16V
C845		1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C846		1-117-767-91	CERAMIC	330PF	10%	2KV
C847		1-107-364-11	MYLAR	0.01UF	10%	200V
C848		1-107-364-11	MYLAR	0.01UF	10%	200V
C849		1-106-375-12	MYLAR	0.022UF	5%	200V
C850		1-106-220-00	MYLAR	0.1UF	10%	100V
C851		1-107-675-11	ELECT	1UF	20%	450V
C852		1-117-665-11	FILM	0.33UF	5%	250V
C854		1-126-948-11	ELECT	100UF	20%	35V
C855		1-107-894-11	ELECT	220UF	20%	35V
C857		1-104-666-11	ELECT	220UF	20%	25V
C858		1-137-194-81	FILM	0.47UF	5%	50V
C860		1-162-318-11	CERAMIC	0.001UF	10%	500V
C861		1-104-666-11	ELECT	220UF	20%	25V
C862		1-162-318-11	CERAMIC	0.001UF	10%	500V
C863		1-165-176-11	CERAMIC CHIP	0.047UF	10%	16V
C867		1-165-441-81	ELECT	33UF	20%	160V
C868		1-102-228-00	CERAMIC	470PF	10%	500V
C869		1-107-654-11	ELECT	33UF	20%	250V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK	
C870	1-106-387-00	MYLAR	0.068UF	10%	200V
C876	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C877	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C878	1-162-970-11	CERAMIC CHIP	0.01UF	10%	25V
C900	1-164-505-11	CERAMIC CHIP	2.2UF		16V
C901	1-164-505-11	CERAMIC CHIP	2.2UF		16V
C902	1-126-957-11	ELECT	0.22UF	20%	50V
C903	1-126-935-11	ELECT	470UF	20%	16V
C906	1-164-346-11	CERAMIC CHIP	1UF		16V
C907	1-164-346-11	CERAMIC CHIP	1UF		16V
C908	1-164-346-11	CERAMIC CHIP	1UF		16V
C909	1-164-346-11	CERAMIC CHIP	1UF		16V
C910	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C911	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C912	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C913	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C914	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C915	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C916	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C917	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C918	1-164-346-11	CERAMIC CHIP	1UF		16V
C919	1-164-346-11	CERAMIC CHIP	1UF		16V
C922	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C925	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C955	1-126-947-11	ELECT	47UF	20%	35V
C956	1-126-933-11	ELECT	100UF	20%	16V
C967	1-164-505-11	CERAMIC CHIP	2.2UF		16V
C975	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C979	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C1019	1-125-891-11	CERAMIC CHIP	0.47UF	10%	10V
C1233	1-126-961-11	ELECT	2.2UF	20%	50V
C2602	1-102-114-00	CERAMIC 470PF	10%	50V	
C2631	1-102-228-00	CERAMIC 470PF	10%	500V	
C2636	1-126-972-11	ELECT	1000UF	20%	50V
C2648	1-126-952-11	ELECT	1000UF	20%	35V
		<CONNECTOR>			
CN005	1-564-506-11	PLUG, CONNECTOR 3P			
CN200	1-564-507-11	PLUG, CONNECTOR 4P			
CN600	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P			
CN601	1-691-134-11	PIN, CONNECTOR (PC BOARD) 2P			
CN602 ⚠	1-580-843-11	PIN, CONNECTOR (POWER)			
CN904	1-508-743-00	PIN, CONNECTOR 5P			
		<TRIMMER>			
CT131	1-767-774-22	TRAP, CERAMIC			
CT139	1-767-775-22	TRAP, CERAMIC			
		<DIODE>			
D002	8-719-081-97	DIODE MMDL914T1			
D003	8-719-081-97	DIODE MMDL914T1			
D023	8-719-069-60	DIODE UDZSTE-179.1B			
D024	8-719-069-60	DIODE UDZSTE-179.1B			
D025	8-719-069-60	DIODE UDZSTE-179.1B			
D054	8-719-069-55	DIODE UDZSTE-175.6B			
D055	8-719-069-55	DIODE UDZSTE-175.6B			
D056	8-719-081-97	DIODE MMDL914T1			
D057	8-719-081-97	DIODE MMDL914T1			
D058	8-719-081-97	DIODE MMDL914T1			

REF NO.	PART NO.	DESCRIPTION	REMARK
D059	8-719-081-97	DIODE MMDL914T1	
D060	8-719-069-55	DIODE UDZSTE-175.6B	
D061	8-719-081-97	DIODE MMDL914T1	
D062	8-719-069-55	DIODE UDZSTE-175.6B	
D063	8-719-081-97	DIODE MMDL914T1	
D064	8-719-069-55	DIODE UDZSTE-175.6B	
D065	8-719-069-55	DIODE UDZSTE-175.6B	
D066	8-719-908-03	DIODE GP08D	
D068	8-719-069-55	DIODE UDZSTE-175.6B	
D071	8-719-081-97	DIODE MMDL914T1	
D072	8-719-081-97	DIODE MMDL914T1	
D074	8-719-081-97	DIODE MMDL914T1	
D075	8-719-069-60	DIODE UDZSTE-179.1B	
D076	8-719-081-97	DIODE MMDL914T1	
D100	8-719-421-40	DIODE MA77	
D103	8-759-157-40	IC UPC574J	
D108	8-719-069-55	DIODE UDZSTE-175.6B	
D109	8-719-069-55	DIODE UDZSTE-175.6B	
D200	8-719-062-51	DIODE 1PS226-115	
D201	8-719-081-97	DIODE MMDL914T1	
D202	8-719-081-97	DIODE MMDL914T1	
D203	8-719-081-97	DIODE MMDL914T1	
D204	8-719-081-97	DIODE MMDL914T1	
D205	8-719-081-97	DIODE MMDL914T1	
D208	8-719-081-97	DIODE MMDL914T1	
D211	8-719-062-51	DIODE 1PS226-115	
D212	8-719-081-97	DIODE MMDL914T1	
D213	8-719-081-97	DIODE MMDL914T1	
D214	8-719-081-97	DIODE MMDL914T1	
D600	8-719-081-97	DIODE MMDL914T1	
D602	6-500-481-31	DIODE AM01AV1	
D603	6-500-481-31	DIODE AM01AV1	
D604	8-719-077-77	DIODE D3SB60F3	
D605	8-719-109-85	DIODE RD5.1ESB2	
D608	8-719-109-85	DIODE RD5.1ESB2	
D614	8-719-923-86	DIODE MTZJ-T-77-15	
D615	8-719-063-70	DIODE D1NL20U	
D617	6-500-567-11	DIODE 10ERB20-TA2B5	
D618	8-719-063-70	DIODE D1NL20U	
D619	6-500-567-11	DIODE 10ERB20-TA2B5	
D621	8-719-312-10	DIODE RU4AM-T3	
D622	8-719-085-37	DIODE 11EQS10-TB5	
D623	6-500-567-31	DIODE 10ERB20-TB3	
D624	8-719-510-73	DIODE S3L20UF4	
D629	8-719-109-85	DIODE RD5.1ESB2	
D633	8-719-923-86	DIODE MTZJ-T-77-15	
D637	8-719-072-70	DIODE MA2ZD14001S0	
D638	8-719-081-97	DIODE MMDL914T1	
D639	8-719-027-22	DIODE D3S6M-F	
D804	8-719-991-33	DIODE 1SS133T-77	
D805	8-719-991-33	DIODE 1SS133T-77	
D807	8-719-991-33	DIODE 1SS133T-77	
D808	8-719-991-33	DIODE 1SS133T-77	
D809	8-719-991-33	DIODE 1SS133T-77	
D815	8-719-069-60	DIODE UDZSTE-179.1B	
D816	8-719-081-00	DIODE BY228/A52A/	
D817	8-719-979-85	DIODE EGP20G	
D818	8-719-109-85	DIODE RD5.1ESB2	
D820	8-719-908-03	DIODE GP08D	
D823	8-719-302-43	DIODE EL1Z	
D824	8-719-302-43	DIODE EL1Z	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK
D827	8-719-302-43	DIODE EL1Z		
D829	8-719-069-55	DIODE UDZSTE-175.6B		
D830	8-719-081-97	DIODE MMDL914T1		
D900	8-719-069-60	DIODE UDZSTE-179.1B		
D901	8-719-069-60	DIODE UDZSTE-179.1B		
D902	8-719-069-55	DIODE UDZSTE-175.6B		
D903	8-719-069-55	DIODE UDZSTE-175.6B		
D905	8-719-069-60	DIODE UDZSTE-179.1B		
D906	8-719-069-55	DIODE UDZSTE-175.6B		
D907	8-719-069-55	DIODE UDZSTE-175.6B		
D908	8-719-069-55	DIODE UDZSTE-175.6B		
D911	8-719-069-55	DIODE UDZSTE-175.6B		
D912	8-719-069-55	DIODE UDZSTE-175.6B		
D913	8-719-069-55	DIODE UDZSTE-175.6B		
D914	8-719-083-18	DIODE SPB-25MVWF		
D915	8-719-069-55	DIODE UDZSTE-175.6B		
D916	8-719-069-55	DIODE UDZSTE-175.6B		
D918	8-719-069-55	DIODE UDZSTE-175.6B		
D931	8-719-083-57	DIODE UDZSTE-173.6B		
D932	8-719-083-57	DIODE UDZSTE-173.6B		
		<CONNECTOR>		
DY800	1-580-798-11	CONNECTOR PIN (DY)		6P
		<FUSE>		
F600	⚠ 1-576-232-21	FUSE	5A	250V
		<FERRITE BEAD>		
FB001	1-410-397-21	FERRITE	1.1UH	
FB101	1-414-229-11	FERRITE	0UH	
FB603	1-410-397-21	FERRITE	1.1UH	
FB608	1-412-911-31	FERRITE	0UH	
FB800	1-410-397-21	FERRITE	1.1UH	
FH601	1-533-223-11	FUSE HOLDER	0A	0V
FH602	1-533-223-11	FUSE HOLDER	0A	0V
		<IC>		
IC001	6-705-434-21	IC TDA12067H/N1B0B0PX		
IC002	6-704-532-01	IC RPM7240-H5		
IC003	8-759-678-07	IC CAT24WC16JI-TE13		
IC601	6-704-263-01	IC STR-F6267S LF1357		
IC602	6-703-479-01	IC PQ09RD1SJ00H		
IC603	6-703-478-01	IC PQ018EF01SZH		
IC604	8-759-231-53	IC TA7805S		
IC605	6-705-063-01	IC SE135N-LF38		
IC606	8-759-445-59	IC BA033T		
IC607	8-759-832-05	IC BA18BC0FP-E2		
IC801	6-703-708-01	IC LM2903DT		
IC802	6-701-937-01	IC TJM4558CDT		
IC804	6-703-470-01	IC STV9302A		
		<JACK>		
J901	1-817-299-11	PHONO JACK	11P	
J903	1-770-329-13	JACK, PIN 3P		

REF NO.	PART NO.	DESCRIPTION		REMARK
		<CHIP CONDUCTOR>		
JR001	1-216-864-11	SHORT CHIP	0	
JR004	1-216-864-11	SHORT CHIP	0	
JR005	1-216-864-11	SHORT CHIP	0	
JR007	1-216-864-11	SHORT CHIP	0	
JR008	1-216-864-11	SHORT CHIP	0	
JR009	1-216-864-11	SHORT CHIP	0	
JR012	1-216-864-11	SHORT CHIP	0	
JR013	1-216-864-11	SHORT CHIP	0	
JR014	1-216-864-11	SHORT CHIP	0	
JR015	1-216-864-11	SHORT CHIP	0	
JR016	1-216-864-11	SHORT CHIP	0	
JR017	1-216-864-11	SHORT CHIP	0	
JR018	1-216-864-11	SHORT CHIP	0	
JR019	1-216-864-11	SHORT CHIP	0	
JR020	1-216-864-11	SHORT CHIP	0	
JR024	1-216-864-11	SHORT CHIP	0	
JR025	1-216-864-11	SHORT CHIP	0	
JR026	1-216-864-11	SHORT CHIP	0	
JR027	1-216-864-11	SHORT CHIP	0	
JR036	1-216-864-11	SHORT CHIP	0	
JR037	1-216-864-11	SHORT CHIP	0	
JR038	1-216-864-11	SHORT CHIP	0	
JR040	1-216-864-11	SHORT CHIP	0	
JR041	1-216-864-11	SHORT CHIP	0	
JR042	1-216-864-11	SHORT CHIP	0	
JR043	1-216-864-11	SHORT CHIP	0	
JR046	1-216-864-11	SHORT CHIP	0	
JR047	1-216-864-11	SHORT CHIP	0	
JR049	1-216-864-11	SHORT CHIP	0	
JR051	1-216-864-11	SHORT CHIP	0	
JR300	1-216-864-11	SHORT CHIP	0	
JR301	1-216-864-11	SHORT CHIP	0	
JR302	1-216-864-11	SHORT CHIP	0	
JR600	1-216-864-11	SHORT CHIP	0	
JR601	1-216-864-11	SHORT CHIP	0	
JR602	1-216-864-11	SHORT CHIP	0	
JR1006	1-216-864-11	SHORT CHIP	0	
JR1011	1-216-864-11	SHORT CHIP	0	
JR1012	1-216-864-11	SHORT CHIP	0	
JR1013	1-216-864-11	SHORT CHIP	0	
JR1014	1-216-864-11	SHORT CHIP	0	
JR1101	1-216-864-11	SHORT CHIP	0	
JR1110	1-216-864-11	SHORT CHIP	0	
JR1903	1-216-864-11	SHORT CHIP	0	
		<COIL>		
L003	1-414-856-11	INDUCTOR	10UH	
L004	1-414-187-11	INDUCTOR	47UH	
L005	1-414-856-11	INDUCTOR	10UH	
L006	1-414-856-11	INDUCTOR	10UH	
L007	1-414-856-11	INDUCTOR	10UH	
L008	1-414-856-11	INDUCTOR	10UH	
L009	1-414-856-11	INDUCTOR	10UH	
L010	1-469-525-91	INDUCTOR	10UH	
L011	1-469-525-91	INDUCTOR	10UH	
L012	1-412-058-11	INDUCTOR	10UH	
L013	1-469-525-91	INDUCTOR	10UH	
L031	1-469-525-91	INDUCTOR	10UH	
L032	1-469-525-91	INDUCTOR	10UH	

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REF NO.	PART NO.	DESCRIPTION		REMARK
L033	1-469-525-91	INDUCTOR	10UH	
L035	1-469-525-91	INDUCTOR	10UH	
L036	1-469-525-91	INDUCTOR	10UH	
L100	1-414-857-11	INDUCTOR	100UH	
L101	1-410-498-11	INDUCTOR	1.2UH	
L103	1-410-987-42	INDUCTOR	0.33UH	
L106	1-414-189-31	INDUCTOR	100UH	
L600	1-412-533-21	INDUCTOR	47UH	
L601	1-412-533-21	INDUCTOR	47UH	
L602	1-412-529-11	INDUCTOR	22UH	
L800	1-424-796-11	COIL, HORIZONTAL LINEARITY		
L802	1-406-679-11	INDUCTOR	22MH	
L803	1-414-493-41	INDUCTOR	4.7MH	
L805	1-408-947-00	INDUCTOR	2.2MH	
L902	1-414-187-11	INDUCTOR	47UH	
L2601	1-412-525-31	INDUCTOR	10UH	
		<PHOTO COUPLER>		
PH600	⚠ 6-600-187-01	PHOTO COUPLER PC123Y22JOOF		
		<IC LINK>		
PS602	⚠ 1-533-597-41	IC LINK	5A 90V	
PS603	⚠ 1-533-597-41	IC LINK	5A 90V	
PS604	1-533-597-41	IC LINK	5A 90V	
PS605	⚠ 1-533-597-41	IC LINK	5A 90V	
PS2601	⚠ 1-533-597-41	IC LINK	5A 90V	
		<TRANSISTOR>		
Q001	8-729-421-22	TRANSISTOR UN2211		
Q006	8-729-424-67	TRANSISTOR UN2216		
Q007	8-729-424-67	TRANSISTOR UN2216		
Q008	8-729-010-25	TRANSISTOR MSD601-RT1		
Q010	8-729-010-05	TRANSISTOR MSB709-RT1		
Q013	8-729-010-25	TRANSISTOR MSD601-RT1		
Q016	8-729-421-22	TRANSISTOR UN2211		
Q100	8-729-010-25	TRANSISTOR MSD601-RT1		
Q102	8-729-022-54	TRANSISTOR 2SC3779C,D-AA		
Q103	8-729-424-67	TRANSISTOR UN2216		
Q104	8-729-424-67	TRANSISTOR UN2216		
Q111	8-729-010-25	TRANSISTOR MSD601-RT1		
Q200	8-729-421-22	TRANSISTOR UN2211		
Q201	8-729-010-05	TRANSISTOR MSB709-RT1		
Q202	8-729-010-05	TRANSISTOR MSB709-RT1		
Q206	8-729-421-22	TRANSISTOR UN2211		
Q601	8-729-010-25	TRANSISTOR MSD601-RT1		
Q605	6-550-572-01	TRANSISTOR FN155		
Q606	8-729-010-25	TRANSISTOR MSD601-RT1		
Q608	8-729-010-25	TRANSISTOR MSD601-RT1		
Q609	8-729-010-25	TRANSISTOR MSD601-RT1		
Q803	8-729-140-50	TRANSISTOR 2SC3209LK		
Q804	8-729-200-17	TRANSISTOR 2SA1091-O		
Q805	6-550-410-01	TRANSISTOR 2SC5885		
Q806	8-729-010-25	TRANSISTOR MSD601-RT1		
Q807	8-729-010-05	TRANSISTOR MSB709-RT1		
Q808	8-729-053-33	TRANSISTOR IRF614-037		
Q814	8-729-010-25	TRANSISTOR MSD601-RT1		
Q900	8-729-010-05	TRANSISTOR MSB709-RT1		
Q901	8-729-424-67	TRANSISTOR UN2216		
Q902	8-729-424-67	TRANSISTOR UN2216		
Q8009	8-729-200-17	TRANSISTOR 2SA1091-O		
Q8010	8-729-140-50	TRANSISTOR 2SC3209LK		
		<RESISTOR>		
R001	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	
R002	1-216-809-11	METAL CHIP	100 5% 1/10W	
R003	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	
R004	1-216-809-11	METAL CHIP	100 5% 1/10W	
R010	1-216-833-11	METAL CHIP	10K 5% 1/10W	
R011	1-216-821-11	METAL CHIP	1K 5% 1/10W	
R012	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	
R014	1-216-809-11	METAL CHIP	100 5% 1/10W	
R015	1-216-823-11	METAL CHIP	1.5K 5% 1/10W	
R018	1-216-809-11	METAL CHIP	100 5% 1/10W	
R020	1-216-809-11	METAL CHIP	100 5% 1/10W	
R023	1-216-823-11	METAL CHIP	1.5K 5% 1/10W	
R024	1-216-809-11	METAL CHIP	100 5% 1/10W	
R025	1-216-809-11	METAL CHIP	100 5% 1/10W	
R026	1-216-809-11	METAL CHIP	100 5% 1/10W	
R029	1-216-809-11	METAL CHIP	100 5% 1/10W	
R030	1-216-809-11	METAL CHIP	100 5% 1/10W	
R038	1-216-809-11	METAL CHIP	100 5% 1/10W	
R039	1-216-809-11	METAL CHIP	100 5% 1/10W	
R041	1-216-809-11	METAL CHIP	100 5% 1/10W	
R042	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	
R044	1-216-834-11	METAL CHIP	12K 5% 1/10W	
R045	1-216-809-11	METAL CHIP	100 5% 1/10W	
R046	1-216-809-11	METAL CHIP	100 5% 1/10W	
R048	1-216-809-11	METAL CHIP	100 5% 1/10W	
R051	1-218-885-11	METAL CHIP	39K 0.50% 1/10W	
R056	1-216-809-11	METAL CHIP	100 5% 1/10W	
R058	1-216-809-11	METAL CHIP	100 5% 1/10W	
R059	1-216-821-11	METAL CHIP	1K 5% 1/10W	
R060	1-216-809-11	METAL CHIP	100 5% 1/10W	
R061	1-216-819-11	METAL CHIP	680 5% 1/10W	
R087	1-216-813-11	METAL CHIP	220 5% 1/10W	
R088	1-216-823-11	METAL CHIP	1.5K 5% 1/10W	
R096	1-216-813-11	METAL CHIP	220 5% 1/10W	
R097	1-216-813-11	METAL CHIP	220 5% 1/10W	
R098	1-216-813-11	METAL CHIP	220 5% 1/10W	
R099	1-216-813-11	METAL CHIP	220 5% 1/10W	
R100	1-216-821-11	METAL CHIP	1K 5% 1/10W	
R103	1-211-981-11	METAL CHIP	33 0.50% 1/10W	
R106	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	
R107	1-216-828-11	METAL CHIP	3.9K 5% 1/10W	
R108	1-218-839-11	METAL CHIP	470 0.50% 1/10W	
R109	1-216-019-00	RES-CHIP	56 5% 1/10W	
R110	1-216-821-11	METAL CHIP	1K 5% 1/10W	
R111	1-216-833-11	METAL CHIP	10K 5% 1/10W	
R112	1-218-867-11	METAL CHIP	6.8K 0.50% 1/10W	
R113	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	
R114	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	
R115	1-216-809-11	METAL CHIP	100 5% 1/10W	
R116	1-216-809-11	METAL CHIP	100 5% 1/10W	
R118	1-216-809-11	METAL CHIP	100 5% 1/10W	
R119	1-211-981-11	METAL CHIP	33 0.50% 1/10W	
R121	1-215-925-11	METAL OXIDE	22K 5% 3W	
R131	1-216-809-11	METAL CHIP	100 5% 1/10W	
R149	1-216-864-11	SHORT CHIP	0	

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R150	1-216-809-11	METAL CHIP	100	5%	1/10W
R152	1-216-864-11	SHORT CHIP	0		
R153	1-216-853-11	METAL CHIP	470K	5%	1/10W
R201	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R204	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R212	1-216-864-11	SHORT CHIP	0		
R213	1-216-835-11	METAL CHIP	15K	5%	1/10W
R214	1-216-835-11	METAL CHIP	15K	5%	1/10W
R215	1-216-833-11	METAL CHIP	10K	5%	1/10W
R216	1-216-833-11	METAL CHIP	10K	5%	1/10W
R217	1-249-411-11	CARBON	330	5%	1/4W
R218	1-216-295-91	SHORT CHIP	0		
R219	1-249-411-11	CARBON	330	5%	1/4W
R220	1-216-864-11	SHORT CHIP	0		
R221	1-216-821-11	METAL CHIP	1K	5%	1/10W
R234	1-249-401-11	CARBON	47	5%	1/4W
R235	1-249-401-11	CARBON	47	5%	1/4W
R237	1-216-809-11	METAL CHIP	100	5%	1/10W
R238	1-216-809-11	METAL CHIP	100	5%	1/10W
R241	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R242	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R300	1-216-809-11	METAL CHIP	100	5%	1/10W
R301	1-216-859-11	METAL CHIP	1.5M	5%	1/10W
R303	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R304	1-216-845-11	METAL CHIP	100K	5%	1/10W
R307	1-216-864-11	SHORT CHIP	0		
R309	1-216-857-11	METAL CHIP	1M	5%	1/10W
R310	1-216-821-11	METAL CHIP	1K	5%	1/10W
R311	1-216-841-11	METAL CHIP	47K	5%	1/10W
R312	1-216-857-11	METAL CHIP	1M	5%	1/10W
R313	1-216-847-11	METAL CHIP	150K	5%	1/10W
R314	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R315	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R317	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R320	1-218-863-11	METAL CHIP	4.7K	0.50%	1/10W
R322	1-218-863-11	METAL CHIP	4.7K	0.50%	1/10W
R323	1-216-809-11	METAL CHIP	100	5%	1/10W
R324	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R331	1-216-809-11	METAL CHIP	100	5%	1/10W
R336	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R337	1-216-817-11	METAL CHIP	470	5%	1/10W
R338	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R339	1-216-809-11	METAL CHIP	100	5%	1/10W
R340	1-216-833-11	METAL CHIP	10K	5%	1/10W
R341	1-216-809-11	METAL CHIP	100	5%	1/10W
R355	1-216-837-11	METAL CHIP	22K	5%	1/10W
R356	1-216-864-11	SHORT CHIP	0		
R360	1-216-864-11	SHORT CHIP	0		
R363	1-216-864-11	SHORT CHIP	0		
R364	1-216-821-11	METAL CHIP	1K	5%	1/10W
R377	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R379	1-216-843-11	METAL CHIP	68K	5%	1/10W
R380	1-216-809-11	METAL CHIP	100	5%	1/10W
R384	1-216-809-11	METAL CHIP	100	5%	1/10W
R385	1-216-809-11	METAL CHIP	100	5%	1/10W
R386	1-216-809-11	METAL CHIP	100	5%	1/10W
R392	1-216-833-11	METAL CHIP	10K	5%	1/10W
R393	1-216-809-11	METAL CHIP	100	5%	1/10W
R394	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R395	1-216-845-11	METAL CHIP	100K	5%	1/10W
R397	1-216-125-00	RES-CHIP	1.5M	5%	1/10W
R398	1-216-797-11	METAL CHIP	10	5%	1/10W

REF NO.	PART NO.	DESCRIPTION		REMARK	
R400	1-260-288-11	CARBON	0.47	5%	1/2W
R401	1-260-288-11	CARBON	0.47	5%	1/2W
R405	1-260-288-11	CARBON	0.47	5%	1/2W
R406	1-260-127-11	CARBON	220K	5%	1/2W
R411	1-214-909-00	METAL	68K	1%	1/2W
R412	1-214-761-00	METAL	22K	1%	1/4W
R413	1-215-449-00	METAL	15K	1%	1/4W
R414	1-260-336-11	CARBON	4.7K	5%	1/2W
R416	1-260-107-11	CARBON	4.7K	5%	1/2W
R420	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R421	1-216-833-11	METAL CHIP	10K	5%	1/10W
R423	1-216-864-11	SHORT CHIP	0		
R424	1-218-899-11	METAL CHIP	150K	0.50%	1/16W
R602	1-216-833-11	METAL CHIP	10K	5%	1/10W
R609	1-216-833-11	METAL CHIP	10K	5%	1/10W
R612	1-215-425-00	METAL	1.5K	1%	1/4W
R616	1-245-527-11	METAL	1	5%	10W
R618	1-249-432-11	CARBON	18K	5%	1/4W
R619	1-216-361-00	METAL OXIDE	0.22	5%	2W
R620	1-216-362-21	METAL OXIDE	0.27	5%	2W
R621	1-249-409-11	CARBON	220	5%	1/4W
R623	1-218-877-11	METAL CHIP	18K	0.50%	1/10W
R624	1-215-429-00	METAL	2.2K	1%	1/4W
R625	1-216-864-11	SHORT CHIP	0		
R627	1-249-385-11	CARBON	2.2	5%	1/4W
R631	1-249-425-11	CARBON	4.7K	5%	1/4W
R634	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R635	1-216-833-11	METAL CHIP	10K	5%	1/10W
R636	1-249-421-11	CARBON	2.2K	5%	1/4W
R638	1-245-526-11	METAL	0.68	5%	10W
R645	1-218-899-11	METAL CHIP	150K	0.50%	1/16W
R646	1-218-851-11	METAL CHIP	1.5K	0.50%	1/10W
R647	1-216-821-11	METAL CHIP	1K	5%	1/10W
R650	⚠ 1-240-917-91	METAL	8.2M	5%	1W
R655	1-216-809-11	METAL CHIP	100	5%	1/10W
R656	1-249-381-11	CARBON	1	5%	1/4W
R658	1-245-464-21	METAL	120K	1%	1/4W
R659	1-245-470-21	METAL	220K	1%	1/4W
R660	1-245-478-21	METAL	470K	1%	1/4W
R661	1-245-480-21	METAL	560K	1%	1/4W
R667	1-216-821-11	METAL CHIP	1K	5%	1/10W
R668	1-216-839-11	METAL CHIP	33K	5%	1/10W
R820	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R821	1-216-837-11	METAL CHIP	22K	5%	1/10W
R822	1-249-417-11	CARBON	1K	5%	1/4W
R823	1-245-468-21	METAL	180K	1%	1/4W
R824	1-216-839-11	METAL CHIP	33K	5%	1/10W
R825	1-243-606-71	METAL OXIDE	1K	5%	3W
R826	1-247-891-00	CARBON	330K	5%	1/4W
R827	1-216-369-00	METAL OXIDE	1	5%	2W
R828	1-243-606-71	METAL OXIDE	1K	5%	3W
R829	1-243-606-71	METAL OXIDE	1K	5%	3W
R830	1-260-332-51	CARBON	2.2K	5%	1/2W
R831	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R833	1-260-125-11	CARBON	150K	5%	1/2W
R834	1-245-468-21	METAL	180K	1%	1/4W
R835	1-260-127-11	CARBON	220K	5%	1/2W
R838	1-216-838-11	METAL CHIP	27K	5%	1/10W
R839	1-216-864-11	SHORT CHIP	0		
R843	1-216-864-11	SHORT CHIP	0		
R844	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R846	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R847	1-216-833-11	METAL CHIP	10K	5%	1/10W
R851	1-216-821-11	METAL CHIP	1K	5%	1/10W
R852	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R853	1-218-859-11	METAL CHIP	3.3K	0.50%	1/10W
R854	1-218-877-11	METAL CHIP	18K	0.50%	1/10W
R855	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R856	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R859	1-218-883-11	METAL CHIP	33K	0.50%	1/10W
R861	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R864	1-218-865-11	METAL CHIP	5.6K	0.50%	1/10W
R865	1-216-821-11	METAL CHIP	1K	5%	1/10W
R866	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R868	1-249-393-11	CARBON	10	5%	1/4W
R869	1-249-381-11	CARBON	1	5%	1/4W
R870	1-218-859-11	METAL CHIP	3.3K	0.50%	1/10W
R871	1-243-692-71	METAL OXIDE	220	5%	1W
R872	1-216-864-11	SHORT CHIP	0		
R873	1-216-841-11	METAL CHIP	47K	5%	1/10W
R876	1-216-833-11	METAL CHIP	10K	5%	1/10W
R877	1-218-895-11	METAL CHIP	100K	0.50%	1/10W
R878	1-216-349-00	METAL OXIDE	1	5%	1W
R879	1-245-470-21	METAL	220K	1%	1/4W
R880	1-245-470-21	METAL	220K	1%	1/4W
R881	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R882	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R883	1-249-421-11	CARBON	2.2K	5%	1/4W
R887	1-216-837-11	METAL CHIP	22K	5%	1/10W
R888	1-218-887-11	METAL CHIP	47K	0.50%	1/10W
R889	1-243-531-71	METAL OXIDE	100	5%	3W
R890	1-215-910-00	METAL OXIDE	68	5%	3W
R891	1-249-385-11	CARBON	2.2	5%	1/4W
R893	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R895	1-218-859-11	METAL CHIP	3.3K	0.50%	1/10W
R902	1-216-821-11	METAL CHIP	1K	5%	1/10W
R904	1-216-821-11	METAL CHIP	1K	5%	1/10W
R905	1-216-840-11	METAL CHIP	39K	5%	1/10W
R906	1-216-817-11	METAL CHIP	470	5%	1/10W
R907	1-216-840-11	METAL CHIP	39K	5%	1/10W
R908	1-216-840-11	METAL CHIP	39K	5%	1/10W
R909	1-216-840-11	METAL CHIP	39K	5%	1/10W
R910	1-216-817-11	METAL CHIP	470	5%	1/10W
R911	1-216-813-11	METAL CHIP	220	5%	1/10W
R913	1-216-853-11	METAL CHIP	470K	5%	1/10W
R914	1-216-853-11	METAL CHIP	470K	5%	1/10W
R915	1-216-849-11	METAL CHIP	220K	5%	1/10W
R916	1-216-849-11	METAL CHIP	220K	5%	1/10W
R917	1-218-285-11	METAL CHIP	75	5%	1/10W
R920	1-216-849-11	METAL CHIP	220K	5%	1/10W
R921	1-216-849-11	METAL CHIP	220K	5%	1/10W
R924	1-216-853-11	METAL CHIP	470K	5%	1/10W
R925	1-216-813-11	METAL CHIP	220	5%	1/10W
R926	1-216-813-11	METAL CHIP	220	5%	1/10W
R927	1-216-813-11	METAL CHIP	220	5%	1/10W
R928	1-218-285-11	METAL CHIP	75	5%	1/10W
R929	1-218-285-11	METAL CHIP	75	5%	1/10W
R930	1-218-285-11	METAL CHIP	75	5%	1/10W
R931	1-216-807-11	METAL CHIP	68	5%	1/10W
R932	1-216-864-11	SHORT CHIP	0		
R933	1-216-864-11	SHORT CHIP	0		

REF NO.	PART NO.	DESCRIPTION		REMARK	
R940	1-216-849-11	METAL CHIP	220K	5%	1/10W
R941	1-216-849-11	METAL CHIP	220K	5%	1/10W
R945	1-216-833-11	METAL CHIP	10K	5%	1/10W
R946	1-216-833-11	METAL CHIP	10K	5%	1/10W
R989	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2646	1-249-381-11	CARBON	1	5%	1/4W
R2647	1-249-429-11	CARBON	10K	5%	1/4W
R8009	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W
R8010	1-245-464-21	METAL	120K	1%	1/4W
R8011	1-216-841-11	METAL CHIP	47K	5%	1/10W
R8012	1-216-841-11	METAL CHIP	47K	5%	1/10W
R8013	1-245-462-21	METAL	100K	1%	1/4W
R9005	1-216-864-11	SHORT CHIP	0		
R9006	1-216-864-11	SHORT CHIP	0		
R9017	1-216-809-11	METAL CHIP	100	5%	1/10W
R9018	1-216-809-11	METAL CHIP	100	5%	1/10W
R9019	1-216-809-11	METAL CHIP	100	5%	1/10W
R9020	1-216-809-11	METAL CHIP	100	5%	1/10W
R9021	1-216-809-11	METAL CHIP	100	5%	1/10W
R9022	1-216-809-11	METAL CHIP	100	5%	1/10W
R9023	1-216-809-11	METAL CHIP	100	5%	1/10W
R9025	1-216-809-11	METAL CHIP	100	5%	1/10W
R9026	1-216-838-11	METAL CHIP	27K	5%	1/10W
R9027	1-216-838-11	METAL CHIP	27K	5%	1/10W
R9028	1-216-809-11	METAL CHIP	100	5%	1/10W
R9030	1-216-809-11	METAL CHIP	100	5%	1/10W
R9031	1-216-809-11	METAL CHIP	100	5%	1/10W
R9036	1-216-809-11	METAL CHIP	100	5%	1/10W
R9050	1-216-864-11	SHORT CHIP	0		
R9053	1-218-285-11	METAL CHIP	75	5%	1/10W

<RELAY>

RY600	⚠	1-755-198-12	RELAY, AC POWER

<SWITCH>

S600	⚠	1-571-433-21	SWITCH, PUSH (AC POWER)
S800		1-572-707-11	SWITCH, LEVER
SWF100		1-781-042-11	FILTER, SURFACE WAVE

<TRANSFORMER>

T600	⚠	1-456-354-11	LINE FILTER COIL
T602	⚠	1-439-695-11	CONVERTER TRANSFORMER (SRT)
T603	⚠	1-456-354-11	LINE FILTER COIL
T800		1-435-374-11	TRANSFORMER, FERRITE (HDT)

<THERMISTOR>

THP600	⚠	1-804-530-11	THERMISTOR, POSITIVE

<TEST PIN>

TP02		1-536-354-00	POST PIN
TP03		1-536-354-00	POST PIN
TP04		1-536-354-00	POST PIN

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REF NO.	PART NO.	DESCRIPTION	REMARK
TP601	1-536-354-00	POST PIN	
TP602	1-536-354-00	POST PIN	
		<TUNER>	
TU102	1-693-636-11	TUNER (TEDE9)	
		<VARISTOR>	
VDR600	1-804-995-21	VARISTOR	
		<CRYSTAL>	
X001	1-795-839-21	QUARTZ CRYSTAL	UNIT

VARIANT PARTS LIST

REF NO.	PART NO.	DESCRIPTION			
		<CAPACITOR>			
C200	1-127-715-91	CERAMIC CHIP (KV-HW21M80/M80J)	0.22UF	10%	16V
C200	1-125-837-91	CERAMIC CHIP (KV-HW21M83)	1UF	10%	6.3V
C201	1-127-715-91	CERAMIC CHIP (KV-HW21M80/M80J)	0.22UF	10%	16V
C201	1-125-837-91	CERAMIC CHIP (KV-HW21M83)	1UF	10%	6.3V
C204	1-130-495-00	MYLAR (KV-HW21M80/M80J)	0.1UF	5%	50V
C204	1-137-374-11	MYLAR (KV-HW21M83)	0.047UF	5%	50V
C205	1-126-959-11	ELECT (KV-HW21M80/M80J)	0.47UF	20%	50V
C206	1-162-970-11	CERAMIC CHIP (KV-HW21M80/M80J)	0.01UF	10%	25V
C206	1-165-176-11	CERAMIC CHIP (KV-HW21M83)	0.047UF	10%	16V
C207	1-130-495-00	MYLAR (KV-HW21M80/M80J)	0.1UF	5%	50V
C207	1-137-374-11	MYLAR (KV-HW21M83)	0.047UF	5%	50V
C208	1-162-970-11	CERAMIC CHIP (KV-HW21M80/M80J)	0.01UF	10%	25V
C208	1-165-176-11	CERAMIC CHIP (KV-HW21M83)	0.047UF	10%	16V
C209	1-126-959-11	ELECT (KV-HW21M80/M80J)	0.47UF	20%	50V
C211	1-126-963-11	ELECT (KV-HW21M80/M80J)	4.7UF	20%	50V
C211	1-126-964-11	ELECT (KV-HW21M83)	10UF	20%	50V
C223	1-128-550-11	ELECT (KV-HW21M83)	2200UF	20%	50V
C224	1-125-837-91	CERAMIC CHIP (KV-HW21M83)	1UF	10%	6.3V
C226	1-125-889-91	CERAMIC CHIP (KV-HW21M83)	2.2UF	10%	10V
C227	1-125-889-91	CERAMIC CHIP (KV-HW21M83)	2.2UF	10%	10V
C228	1-126-961-11	ELECT (KV-HW21M83)	2.2UF	20%	50V
C230	1-137-374-11	MYLAR (KV-HW21M83)	0.047UF	5%	50V
C236	1-130-495-00	MYLAR (KV-HW21M83)	0.1UF	5%	50V
C237	1-130-495-00	MYLAR (KV-HW21M83)	0.1UF	5%	50V
		<CONNECTOR>			
CN201	1-564-506-11	PLUG, CONNECTOR 3P (KV-HW21M83)			
		<DIODE>			
D635	8-719-072-63	DIODE PDZ3.6B-115 (KV-HW21M80/M83)			
D635	8-719-083-57	DIODE UDZSTE-173.6B (KV-HW21M80J)			
D819	6-500-567-31	DIODE 10ERB20-TB3 (KV-HW21M80/M83)			
D819	6-500-567-01	DIODE 10ERB20-TA1B2 (KV-HW21M80J)			
D821	6-500-567-31	DIODE 10ERB20-TB3 (KV-HW21M80/M83)			
D821	6-500-567-01	DIODE 10ERB20-TA1B2 (KV-HW21M80J)			
D2625	8-719-510-73	DIODE S3L20UF4 (KV-HW21M80/M80J)			
D2626	8-719-067-18	DIODE RN4Z (KV-HW21M83)			
		<FERRITE>			
FB2602	1-410-397-21	FERRITE	1.1UH (KV-HW21M83)		
FB2607	1-410-397-21	FERRITE (KV-HW21M80/M80J)	1.1UH		
		<IC>			
IC200	6-703-475-01	IC AN5276T (KV-HW21M80/M80J)			
IC200	6-703-476-01	IC AN17803A (KV-HW21M83)			
		<JACK>			
J200	1-770-786-22	JACK (KV-HW21M80/M80J)			
J201	1-817-294-11	JACK (KV-HW21M83)			
		<TRANSISTOR>			
Q204	8-729-010-25	TRANSISTOR MSD601-RT1 (KV-HW21M83)			
Q205	8-729-010-25	TRANSISTOR MSD601-RT1 (KV-HW21M83)			
		<RESISTOR>			
R200	1-216-827-11	METAL CHIP (KV-HW21M80/M80J)	3.3K	5%	1/10W
R200	1-216-864-11	SHORT CHIP	0 (KV-HW21M83)		
R202	1-216-830-11	METAL CHIP (KV-HW21M80/M80J)	5.6K	5%	1/10W
R202	1-216-839-11	METAL CHIP (KV-HW21M83)	33K	5%	1/10W
R203	1-216-827-11	METAL CHIP (KV-HW21M80/M80J)	3.3K	5%	1/10W
R203	1-216-864-11	SHORT CHIP	0 (KV-HW21M83)		
R205	1-216-830-11	METAL CHIP (KV-HW21M80/M80J)	5.6K	5%	1/10W
R205	1-216-839-11	METAL CHIP (KV-HW21M83)	33K	5%	1/10W
R207	1-218-867-11	METAL CHIP (KV-HW21M80/M80J)	6.8K	0.50%	1/10W
R207	1-216-827-11	METAL CHIP (KV-HW21M83)	3.3K	5%	1/10W

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

A C J (KV-HW21M83)

REF NO.	PART NO.	DESCRIPTION			REMARK
R208	1-218-867-11	METAL CHIP (KV-HW21M80/M80J)	6.8K	0.50%	1/10W
R208	1-216-827-11	METAL CHIP (KV-HW21M83)	3.3K	5%	1/10W
R210	1-216-835-11	METAL CHIP (KV-HW21M80/M80J)	15K	5%	1/10W
R210	1-216-833-11	METAL CHIP (KV-HW21M83)	10K	5%	1/10W
R211	1-216-835-11	METAL CHIP (KV-HW21M80/M80J)	15K	5%	1/10W
R211	1-216-833-11	METAL CHIP (KV-HW21M83)	10K	5%	1/10W
R222	1-216-817-11	METAL CHIP (KV-HW21M83)	470	5%	1/10W
R223	1-216-833-11	METAL CHIP (KV-HW21M83)	10K	5%	1/10W
R224	1-216-829-11	METAL CHIP (KV-HW21M83)	4.7K	5%	1/10W
R225	1-216-829-11	METAL CHIP (KV-HW21M83)	4.7K	5%	1/10W
R226	1-218-867-11	METAL CHIP (KV-HW21M83)	6.8K	0.50%	1/10W
R227	1-216-830-11	METAL CHIP (KV-HW21M83)	5.6K	5%	1/10W
R228	1-216-830-11	METAL CHIP (KV-HW21M83)	5.6K	5%	1/10W
R229	1-216-823-11	METAL CHIP (KV-HW21M83)	1.5K	5%	1/10W
R230	1-216-864-11	SHORT CHIP	0 (KV-HW21M83)		
R232	1-216-827-11	METAL CHIP (KV-HW21M83)	3.3K	5%	1/10W
R233	1-249-401-11	CARBON (KV-HW21M83)	47	5%	1/4W
R236	1-216-833-11	METAL CHIP (KV-HW21M80/M80J)	10K	5%	1/10W
R236	1-216-827-11	METAL CHIP (KV-HW21M83)	3.3K	5%	1/10W
		<TRANSFORMER>			
T801	⚠ 1-453-329-41	TRANSFORMER ASSY FLYBACK (NX-4751//M3A4) (KV-HW21M80/M80J)			
T801	⚠ 1-453-309-21	TRANSFORMER ASSY FLYBACK (NX-4450//M3A4) (KV-HW21M83)			

****

*	A-1405-156-A	MOUNTED PWB(VAR), C (KV-HW21M80/HW21M83)
*	A-1410-404-A	MOUNTED PWB(VAR), C (KV-HW21M80J)
		**********
	4-382-854-01	SCREW (M3X8), P, SW (+)
		<CAPACITOR>

C751	1-107-961-91	ELECT	10UF	20%	250V
C752	1-115-350-51	CERAMIC	0.0047UF		2KV
C754	1-107-651-11	ELECT	4.7UF	20%	250V
C781	1-107-651-11	ELECT	4.7UF	20%	250V
C782	1-102-074-00	CERAMIC	0.001UF	10%	50V
C783	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C786	1-162-964-11	CERAMIC CHIP	0.001UF	10%	50V
C787	1-164-645-11	CERAMIC	1000PF	10%	500V

REF NO.	PART NO.	DESCRIPTION			REMARK
		<CONNECTOR>			
CN701	1-564-510-11	PLUG, CONNECTOR 7P			
CN703	1-564-508-11	PLUG, CONNECTOR 5P			
CN704	1-695-915-11	TAB (CONTACT)			
CN705	1-695-915-11	TAB (CONTACT)			
		<DIODE>			
D750	8-719-908-03	DIODE GP08D			
D754	8-719-970-83	DIODE HSS82-TJ			
D755	8-719-970-83	DIODE HSS82-TJ			
D756	8-719-970-83	DIODE HSS82-TJ			
D780	8-719-991-33	DIODE 1SS133T-77			
D781	8-719-991-33	DIODE 1SS133T-77			
D782	8-719-069-55	DIODE UDZSTE-175.6B			
		<IC>			
IC751	6-703-482-01	IC TDA6108AJF/N1			
		<JACK>			
J751	⚠ 1-451-544-11	SOCKET, CRT			
		<COIL>			
L780	1-410-667-31	INDUCTOR	22UH		
		<RESISTOR>			
R713	1-216-864-11	SHORT CHIP	0		
R752	1-216-819-11	METAL CHIP	680	5%	1/10W
R753	1-216-819-11	METAL CHIP	680	5%	1/10W
R754	1-216-819-11	METAL CHIP	680	5%	1/10W
R756	1-219-746-11	METAL	1K	5%	1/2W
R757	1-219-746-11	METAL	1K	5%	1/2W
R758	1-219-746-11	METAL	1K	5%	1/2W
R763	1-260-087-11	CARBON	100	5%	1/2W
R764	1-260-087-11	CARBON	100	5%	1/2W
R765	1-260-087-11	CARBON	100	5%	1/2W
R773	1-260-132-11	CARBON	560K	5%	1/2W
R774	1-215-912-11	METAL OXIDE	150	5%	3W
R780	1-260-131-11	CARBON	470K	5%	1/2W
R781	1-243-950-71	RES, OXIDE METAL FILM	0.56		
R783	1-260-087-11	CARBON	100	5%	1/2W
R794	1-249-377-11	CARBON	0.47	5%	1/4W
R795	1-260-352-11	CARBON	100K	5%	1/2W
		<VARIABLE RESISTOR>			
RV750	1-241-656-11	RES, ADJ, METAL FILM 110M			

****

*	A-1405-802-A	MOUNTED PWB, J (KV-HW21M83)
		**********
		<CONNECTOR>
CN3400	1-564-518-11	PLUG, CONNECTOR 3P

J (KV-HW21M83)

REF NO.	PART NO.	DESCRIPTION	REMARK
		<DIODE>	
D3400	8-719-982-19	DIODE MTZJ-30A	
D3401	8-719-982-19	DIODE MTZJ-30A	
		<JACK>	
J3400	1-694-467-11	TERMINAL, PUSH (2P)	
**********			
		ACCESSORIES AND PACKING MATERIALS	
		**********	
	3-701-910-00	SCREW, SPECIAL (DIA. 3.8X20)	
	1-417-151-22	MATCHING TRANSFORMER, ANTENNA	
	1-501-730-11	ANTENNA, TELESCOPIC	
*	4-039-372-01	BAG, PROTECTION	
*	4-091-756-02	CUSHION, LOWER (KV-HW21M80/M80J)	
*	4-091-646-01	CUSHION, LOWER (KV-HW21M83)	
*	4-091-757-02	CUSHION, UPPER (KV-HW21M80/M80J)	
*	4-091-647-01	CUSHION, UPPER (KV-HW21M83)	
*	4-096-831-02	INDIVIDUAL CARTON (KV-HW21M80)	
*	4-091-648-01	INDIVIDUAL, CARTON (KV-HW21M83)	
*	4-096-903-01	INDIVIDUAL CARTON (KV-HW21M80J)	
	4-095-707-13	MANUAL, INSTRUCTION (KV-HW21M80/M83)	
	4-099-165-11	MANUAL,INSTRUCTION (KV-HW21M80J)	
	4-392-003-11	BAND, HOLD	
	4-392-004-11	CLIP	
**********			
		REMOTE COMMANDER	
		**********	
	1-478-009-11	REMOTE COMMANDER (RM-W101)	
	4-084-290-01	REMOTE COMMANDER BATTERY COVER	

REF NO.	PART NO.	DESCRIPTION	REMARK

Sony Corporation
Sony Technology Malaysia Sdn. Bhd.
Visual Products

9-872-408-01

English
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SONY

4-095-707-**13** (1)

Trinitron Color TV

Operating Instructions — GB

- Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi — FR

- Avant de faire fonctionner cet appareil, lisez attentivement le présent mode d' emploi et conservez-le pour toute référence ultérieure.

دفترچه راهنما — PR

- قبل از تنظیم کردن دستگاه، لطفا دفترچه راهنما را با دقت بخوانید وبه منظور مراجعه بعدی ان رانگه دارید.

تعليمات التشغيل — AR

- قبل تشغيل الجهاز، يرجى قراءة هذا الدليل بصورة كاملة والاحتفاظ به للمراجعة مستقبلاً.

FD Trinitron

WEGA

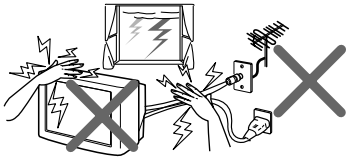
KV-HW21

M85
M83
M81
M80

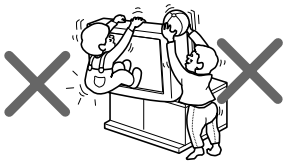
© 2003 Sony Corporation

WARNING

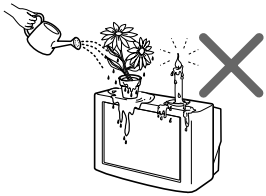
- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC.
- Do not plug in the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.
- To avoid battery leakage and damage to the remote, remove the batteries from the remote if you are not going to use it for several days. If any liquid leaks from the batteries and touches your skin, immediately wash it away with water.



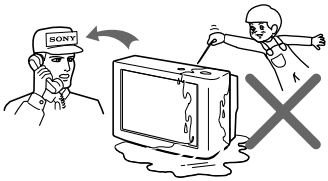
For your own safety, do not touch any part of the TV, the power cord and the antenna cable during lightning storms.



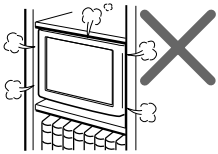
For children's safety, do not leave children alone with the TV. Do not allow children to climb onto it.



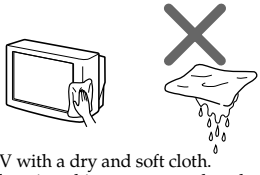
Do not place any objects on the TV. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.



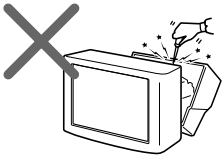
Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.



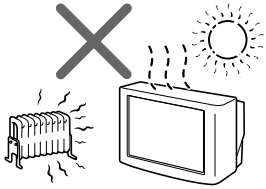
Do not block the ventilation openings of the TV. Do not install the TV in a confined space, such as a bookcase or built-in cabinet.



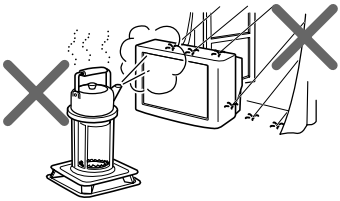
Clean the TV with a dry and soft cloth.
Do not use benzine, thinner, or any other chemicals to clean the TV. Do not attach anything (e.g., adhesive tape, cellophane tape, glue) on the painted cabinet of the TV. Do not scratch the picture tube.



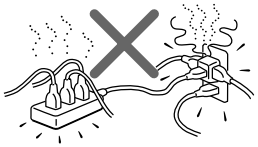
Do not open the cabinet and the rear cover of the TV as high voltages and other hazards are present inside the TV. Refer servicing and disposal of the TV to qualified personnel.



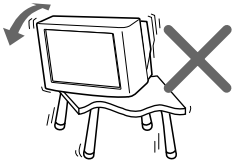
Your TV is recommended for home use only.
Do not use the TV in any vehicle or where it may be subject to excessive dust, heat, moisture or vibrations.



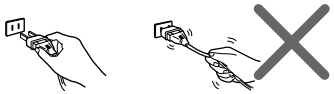
To prevent fire or shock hazard, do not expose the TV to rain or moisture.



Do not plug in too many appliances to the same power socket. Do not damage the power cord.



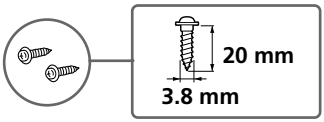
Install the TV on a stable TV stand and floor which can support the TV set weight. Ensure that the TV stand surface is flat and its area is larger than the bottom area of the TV.



Pull the power cord out by the plug. Do not pull the power cord itself. Even if your TV is turned off, it is still connected to the AC power source (mains) as long as the power cord is plugged in. Unplug the TV before moving it or if you are not going to use it for several days.

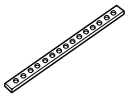
■ Securing the TV

To prevent the TV from falling, use the supplied screws, clamps and band to secure the TV.

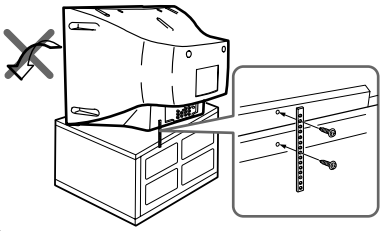


screws

clamps

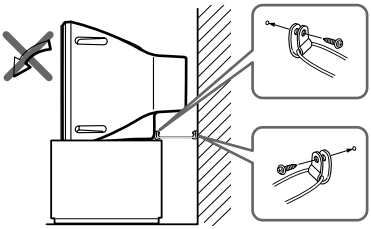


band



Screw the band to the TV stand and to the provided hole at the rear of your TV.

or



(1) Put a cord or chain through the clamps.
(2) Screw one clamp to a wall or pillar and the other clamp to the provided hole at the rear of your TV.

Note

• Use only the supplied screws. Use of other screws may damage the TV.

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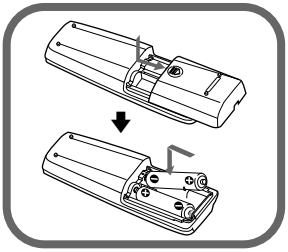
GB

■ Getting Started

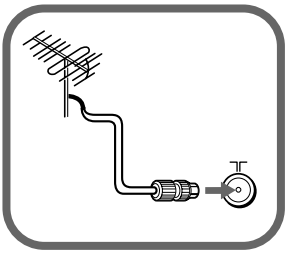


Step 1

Insert the batteries (supplied) into the remote.

Note

- Do not use old or different types of batteries together.

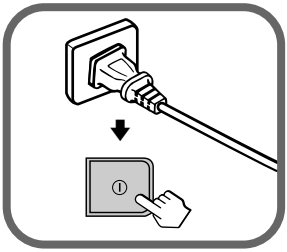


Step 2

Connect the antenna cable (not supplied) to ⊤ (antenna input) at the rear of the TV.

Tip

- You can also connect your TV to other optional components (see page 24).

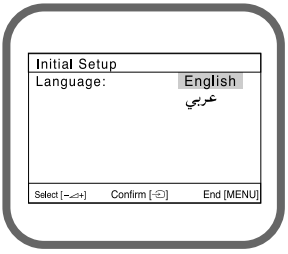


Step 3

Plug in the power cord, then press ⏻ on the TV to turn it on.

Note

- The ⏻ (standby) indicator flashes green for a few seconds when turning on the TV. This does not indicate a malfunction.



Step 4

Set up the TV by following the instructions of the “Initial Setup” menu (see page 7).

■ Setting up your TV ("Initial Setup")

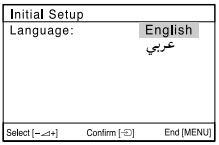
When you turn on your TV for the first time, the "Initial Setup" menu will appear. You may change the menu language, preset the TV channels automatically and adjust the picture position using the buttons on the top control panel.

Tip

- The MENU, ⊕ and ↑/↓/←/→ buttons on the remote control can also be used for the operations below.

1 Press +/– to select the desired menu language, then press ⊖.

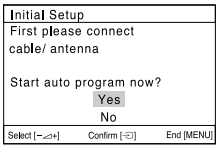
The selected menu language appears.



2 Press +/– to select "Yes", then press ⊖ to preset the channels automatically or select "No" to skip automatic channel presetting.

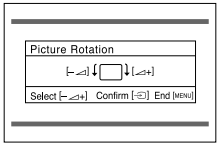
Once you select "Yes", your TV will start searching for all the available channels.

If the message "No channel found. Please connect cable/antenna." appears, check your TV connections, then press ⊖.



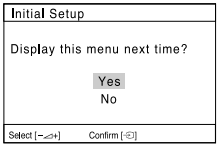
3 Press +/– to adjust the bars on the top and bottom of the menu if they are slanted, then press ⊖ (KV-HW21M85/ HW21M81 only).

If no adjustment is necessary, then press ⊖.



4 Press +/– to select "No", then press ⊖. This menu will not appear again the next time you turn on the TV by pressing ⏻.

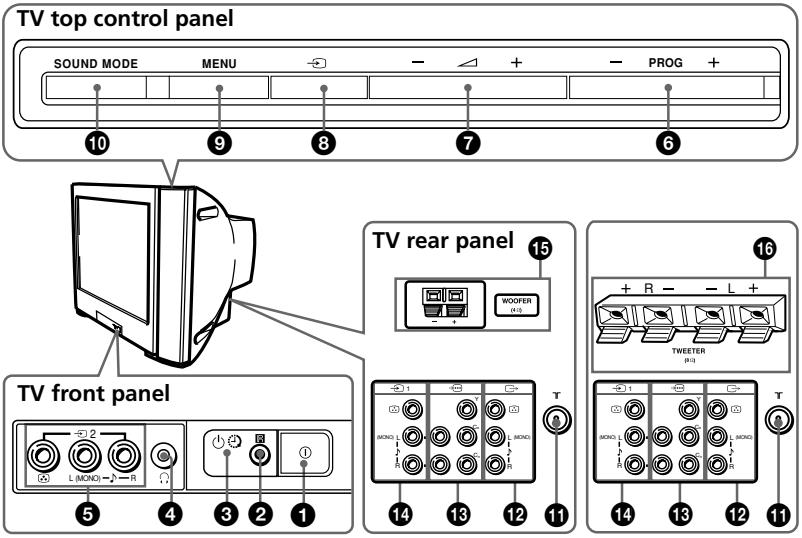
To allow this menu to appear again, select "Yes", then press ⊖.



Tips

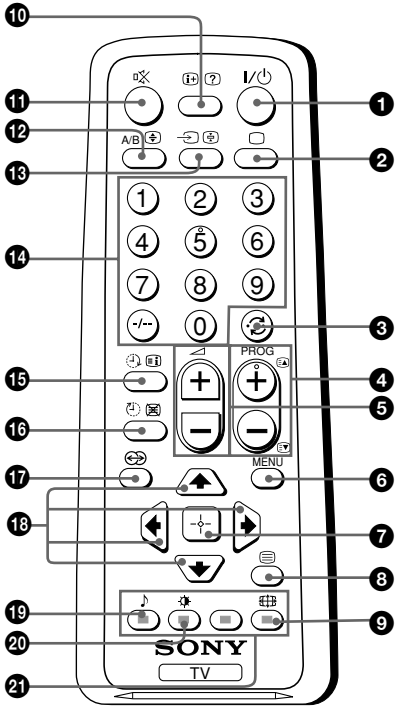
- You can immediately go to the end of the "Initial Setup" menu by pressing MENU.
- You can also set up your TV by pressing the MENU button on the top control panel for about five seconds or using the menu system (see page 13).

■ TV top control, front and rear panels



Button/Terminal	Function	Page
❶ ⏻	Turn off or turn on the TV.	6
❷	Remote control sensor.	–
❸	Wake Up indicator.	19
❸	Standby indicator.	6
❹	Headphone jack.	–
❺ 2	Video input terminal 2.	24
❻ PROG +/–	Select program number.	–
❼ +/–	Adjust volume.	–
❽	Select TV or video input.	24
Menu operations		
❼ +/–	Select and adjust items.	–
❽	Confirm selected items.	–
❾ MENU	Display or cancel the menu.	–
❿ SOUND MODE	Select sound mode options with a 5-Band Graphic Equalizer display.	11
⓫	Antenna input terminal.	24
⓬	Monitor output terminal.	25
⓭	Component video input terminal.	25
⓮ 1	Video input terminal 1.	24
⓯ WOOFER (KV-HW21M83 only)	Enjoy high quality sound.	24
⓰ TWEETER (KV-HW21M85 only)	Enjoy high quality sound.	23

■ Using the remote control and basic functions



Button	Description	Page
❶ I/⏻	Turn off temporarily or turn on the TV.	–
❷ ▭	Display the TV program.	–
❸ ↺	Jump to previous program number.	–
❹ PROG +/–	Select program number.	–
❺ ◿ +/–	Adjust volume.	–
❾ ▦	Change the picture size: “On” (16:9 wide-mode), “Off”.	–
❿ ⓘ+	Display on-screen information.	–
⓫ 🔇	Mute the sound.	–
⓭ ⇨	Select TV or video input.	24
⓮ 0 – 9, -/--	Input numbers.	–
⓱ ⇔	Select surround mode options: “On” (surround), “Simulated” (stereo-like monaural sound), “Off”.	–

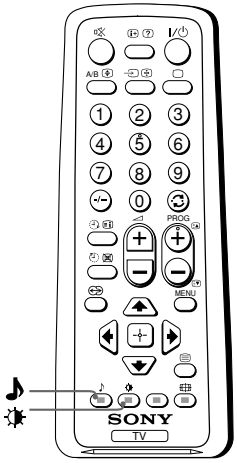
continue

continued

Button Description	Page	
⓳ ♪	Select sound mode options with a 5-Band Graphic Equalizer display.	11
⓴ ☼	Select picture mode options.	11
Menu operations		
❻ MENU	Display or cancel the menu.	15
❼ ⊕	Confirm selected items.	15
⓲ ↑, ↓, ←, →	Select and adjust items.	15
Timer operations		
⓯	Set TV to turn on automatically.	–
⓰	Set TV to turn off automatically.	–
Teletext operations (green label) (KV-HW21M85/HW21M81 only)		
❹ ,	Display the next or previous page.	12
❽	Display Teletext broadcast.	12
❿	Reveal concealed information.	12
⓬	Enlarge the Teletext display.	12
⓭	Stop Teletext display from scrolling.	12
⓯	Display Teletext service contents.	12
⓰	Show TV screen while waiting for Teletext page.	12
㉑ ■ (red, green, yellow, blue)	Access a FASTEXT menu.	12
Stereo/bilingual operations		
⓬ A/B	Not function for your TV.	–

■ Selecting the picture and sound modes

You can select picture and sound modes and adjust the setting to your preference in the “Personal” option.



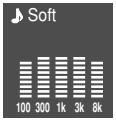
Selecting the picture mode

Press ☼ to select the desired picture mode.

Select	To view
“Dynamic”	high contrast pictures.
“Standard”	normal pictures.
“Soft”	mild pictures.
“Personal”	the last adjusted picture setting from the “Picture Adjustment” option in the menu (see page 16).

Selecting the sound mode

Press ♪ (or SOUND MODE on the top control panel) to select the desired sound mode with a 5-Band Graphic Equalizer display.

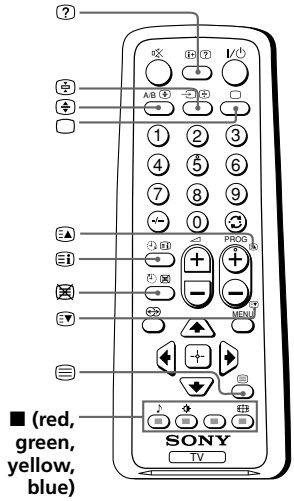
Select		To listen to
“Dynamic”		dynamic and clear sound that emphasizes both the low and high tones.
“Drama”		sound that emphasizes voice and high tones.
“Soft”		soft, natural and relaxing sounds.
“Personal”		the last adjusted sound setting from the “Sound Adjustment” option in the menu (see page 18).

■ Viewing Teletext

▶ KV-HW21M85/HW21M81 only

Some TV stations broadcast an information service called Teletext which allows you to receive various information, such as stock market reports and news.

You can use the buttons on the remote to view Teletext.



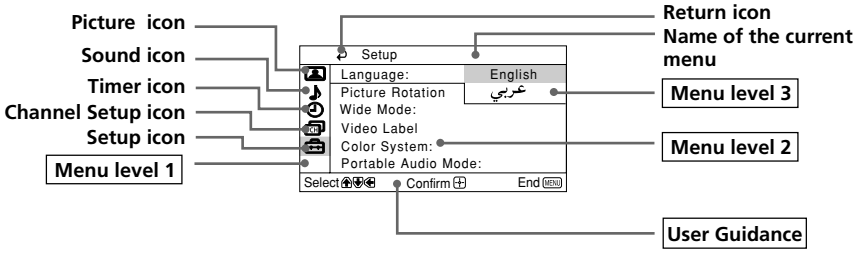
To	Do this
display a Teletext page on the TV picture	Press ☰. Each time you press ☰, the screen changes as follows: Teletext → Teletext and TV → TV. If there is no Teletext broadcast, "100" is displayed at the top left corner of the screen.
check the contents of a Teletext service	Press ⓘ. An overview of the Teletext contents, including page numbers, appears on the screen.
select a Teletext page	Press the number buttons to enter the three-digit page number of the desired Teletext page. If you make a mistake, reenter the correct page number. To access the next or previous page, press ▲ or ▼.
hold (pause) a Teletext display	Press ⇳ to display the symbol "⇳" at the top left corner of the screen. To resume normal Teletext viewing, press ⇳.
reveal concealed information (e.g., an answer to a quiz)	Press ?. To conceal the information, press the button again.
enlarge the Teletext display	Press ⇕. Each time you press ⇕, the Teletext display changes as follows: Enlarge upper half → Enlarge lower half → Normal size.
stand by for a Teletext page while watching a TV program	(1) Enter the Teletext page number that you want to refer to, then press ⊠. (2) When the page number is displayed, press ☰ to show the text.
select a FASTEXT menu or the colored boxes	Press ■ (red, green, yellow and blue) that corresponds to the desired menu or page number.
turn off Teletext	Press ▭.

Note

- The FASTEXT feature can be used only when the FASTEXT broadcast is available.

■ Introducing the menu system

The MENU button lets you open a menu and change the settings of your TV. The following is an overview of the menu system.



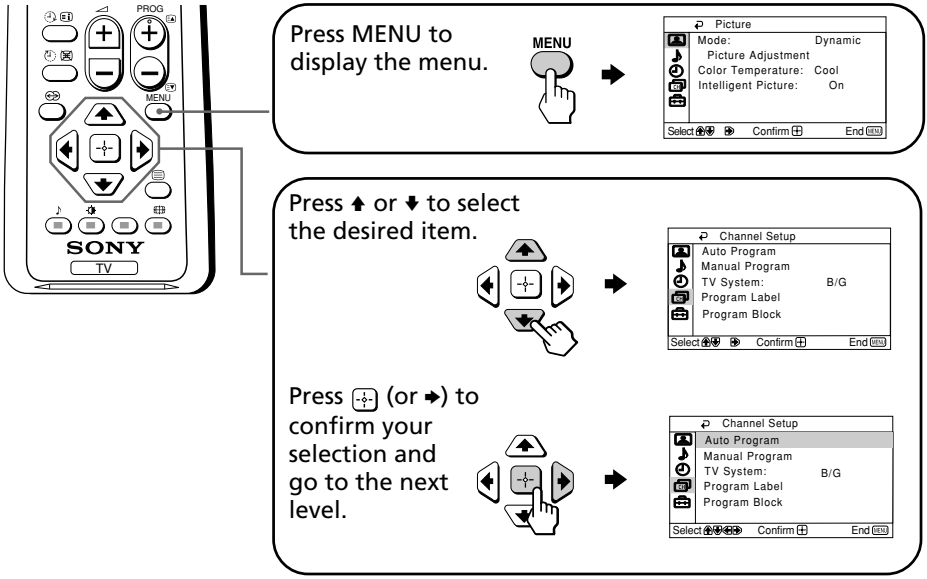
Level 1	Level 2	Level 3/Function	Page
"Picture"	"Mode"	Select the picture mode: "Dynamic" → "Standard" → "Soft" → "Personal"	16
	"Picture Adjustment"	Adjust the "Personal" option: "Picture" → "Brightness" → "Color" → "Hue" → "Sharpness" → "Reset"	
	"Color Temperature"	Adjust white color tint: "Cool" → "Neutral" → "Warm"	
	"Intelligent Picture"	Optimize picture quality: "On" → "Off"	
"Sound"	"Mode"	Select the sound mode: "Dynamic" → "Drama" → "Soft" → "Personal"	17
	"Sound Adjustment"	Adjust sound frequency settings of "Personal" option: "Adjust" → "Reset"	
	"Balance"	Select to emphasize the left and right speakers.	
	"Intelligent Volume"	Adjust volume automatically: "On" → "Off"	
	"Surround"	Select the surround mode: "On" → "Simulated" → "Off"	

continue

continued

Level 1	Level 2	Level 3/Function	Page
"Timer"	"Sleep Timer"	Set TV to turn off automatically.	19
	"Wake Up Timer"	Set TV to turn on automatically.	
"Channel Setup"	"Auto Program"	Preset channels automatically.	20
	"Manual Program"	Preset channels manually.	
	"TV System"	Select the TV system: "B/G" → " I" → "D/K" → "M"	
	"Program Label"	Label the program number.	
	"Program Block"	Block unwanted programs.	
"Setup"	"Language"	Change the menu language: "English" → " عربي"(Arabic)	22
	"Picture Rotation" (KV-HW21M85/ HW21M81 only)	Adjust the picture position.	
	"Wide Mode"	Change the picture size: "On" (16:9 wide-mode) → "Off"	
	"Video Label"	Label the connected equipment.	
	"Color System"	Select the color system: "Auto" → "PAL" → "SECAM" →"NTSC3.58" → "NTSC4.43"	
	"Portable Audio Mode"	Select the input connected to your audio equipment: "Video1" → "Video2" → "Off"	

How to use the menu



Other menu operations

To	Press
Adjust the setting value	↑, ↓, ← or →.
Move to the next/previous menu level	← or →.
Cancel the menu	MENU.

Tips

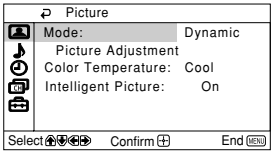
- If you want to exit from Menu level 2 to Menu level 1, press ↑ or ↓ until the return icon (↩) is highlighted, then press ⊕.
- The MENU, ⊖ and ◿ +/– buttons on the top control panel can also be used for the operations above (see page 8).

■ Changing the “Picture” setting

The “Picture” menu allows you to adjust the picture settings.

1 Press MENU.

2 Make sure the “Picture” icon ( ) is selected, then press ⊕.



3 Press ↑ or ↓ to select the desired item (e.g., “Mode”), then press ⊕.

Select	To
“Mode”	choose either “Dynamic”, “Standard”, “Soft” or “Personal”* (see page 11).
“Color Temperature”	adjust white color tint. Choose either “Cool” (blue tint), “Neutral” (neutral tint) or “Warm” (red tint).
“Intelligent Picture”	optimize picture quality. Press ↑ or ↓ to select “On”, then press ⊕. To cancel, select “Off”, then press ⊕.

* You can adjust the setting to your personal preference in the “Picture Adjustment” and “Color Temperature” options only when the “Personal” mode is selected.

Adjusting the “Picture Adjustment” items under “Personal” mode

1 Press ↑ or ↓ to select either “Picture” (contrast), “Brightness”, “Color”, “Hue” (color tones) or “Sharpness”, then press ⊕.

Selecting “Reset” will set your TV to the factory setting.

2 Press ↑,↓,← or → to adjust the setting of your selected item, then press ⊕.

3 Repeat the above steps to adjust other items.

The adjusted settings will be received when you select “Personal”.

Notes

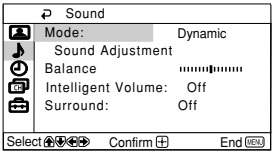
- “Hue” can be adjusted for the NTSC color system only.
- Reducing “Sharpness” can also reduce picture noise.

■ Changing the “Sound” setting

The “Sound” menu allows you to adjust the sound settings.

1 Press MENU.

2 Press ↑ or ↓ to select the “Sound” icon (♪), then press ⊕.



3 Press ↑ or ↓ to select the desired item (e.g., “Mode”), then press ⊕.

Select	To
“Mode”	choose either “Dynamic”, “Drama”, “Soft” or “Personal”* (see page 11).
“Balance”	Press ↓ or ← to emphasize the left speaker. Press ↑ or → to emphasize the right speaker.
“Intelligent Volume”	adjust the volume of all program numbers and video inputs automatically. Press ↑ or ↓ to select “On”, then press ⊕. To cancel, select “Off”, then press ⊕.
“Surround”	choose either “On”, “Simulated” or “Off” (see page 9).

* You can adjust the setting to your personal preference in the “Sound Adjustment” option only when the “Personal” mode is selected (see page 18).

continue

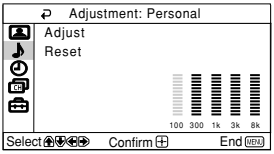
continued

Adjusting the “Sound Adjustment” item under “Personal” mode

The 5-Band Graphic Equalizer feature allows you to adjust sound frequency settings of “Personal” mode in the menu.

1 Make sure that “Adjust” is selected, then press ⊕.

Selecting “Reset” will set your TV to the factory setting.



2 Press ← or → to select the desired sound frequency, then press ↑ or ↓ to adjust the setting and press ⊕.

The adjusted settings will be received when you select “Personal”.

Notes

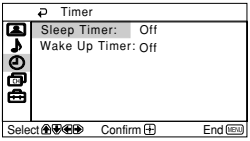
- Adjusting higher frequency will affect higher pitched sound and adjusting lower frequency will affect lower pitched sound.
- You may display the settings directly using the SOUND MODE button on the top control panel (see page 8) or ♪ button on the remote control (see page 10).

■ Changing the “Timer” setting

The “Timer” menu allows you to set TV to turn off and turn on automatically.

1 Press MENU.

2 Press ↑ or ↓ to select the “Timer” icon (), then press .



3 Press ↑ or ↓ to select the desired item (e.g., “Sleep Timer”), then press .

Select	To
“Sleep Timer”	set TV to turn off automatically. Press ↑ or ↓ to select the desired period of time (max. of 1 hour and 30 minutes), then press .
“Wake Up Timer”	set TV to turn on automatically. Press ↑ or ↓ to select the desired period of time (max. of 12 hours), then press . After the selected length of time, the TV switches on automatically and “Wake Up Timer” will appear on the screen. The indicator on the TV lights up amber once you set the “Wake Up Timer”.

Notes

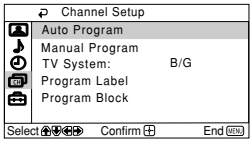
- You can also cancel “Sleep Timer” and “Wake Up Timer” by turning off the TV’s main power.
- If no buttons or controls are pressed for more than one hour after the TV is turned on using the “Wake Up Timer”, the TV automatically goes into standby mode.

■ Changing the “Channel Setup” setting

The “Channel Setup” menu allows you to preset channels automatically, manually preset channels, select the TV system, label the program number and block unwanted programs.

1 Press MENU.

2 Press ↑ or ↓ to select the “Channel Setup” icon (CH), then press ⊕.



3 Press ↑ or ↓ to select the desired item (e.g., “Auto Program”), then press ⊕.

Select	To
“Auto Program”	preset channels automatically.
“Manual Program”	manually preset desired channels and channels that cannot be preset automatically (see **Presetting channels manually** on page 21).
“TV System”	select the TV system. Press ↑ or ↓ to select either “B/G”, “I”, “D/K” or “M” then press ⊕.
“Program Label”	label the program number. (1) Select “Program” and press ⊕. Press ↑ or ↓ to select the program number, then press ⊕. (2) Select “Label” and press ⊕, then press ↑ or ↓ to select alphanumeric characters for the label.
“Program Block”	block unwanted programs. (1) Select “Program” and press ⊕. Press ↑ or ↓ to select the program number, then press ⊕. (2) Select “Block” and press ⊕, then press ↑ or ↓ to choose either “On” or “Off”. If you preset a locked program number, that program number will be unlocked automatically.

Note

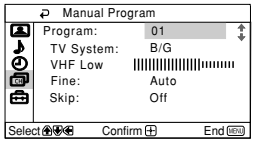
- During automatic channel presetting, your TV screen will indicate “B/G”, “I”, “D/K” or “M” for the “TV System”.

Presetting channels manually

1 After selecting "Manual Program", select the program number to which you want to preset a channel.

(1) Make sure "Program" is selected, then press ⊕.

(2) Press ↑ or ↓ until the program number you want to preset appears on the menu, then press ⊕.



2 Select the desired channel.

(1) Make sure either "VHF Low", "VHF High" or "UHF" is selected, then press ⊕.

(2) Press ↑ or ↓ until the desired channel's broadcast appears on the TV screen, then press ⊕.

3 If the sound of the desired channel is abnormal, select the appropriate TV system.

(1) Press ↑ or ↓ to select "TV System", then press ⊕.

(2) Press ↑ or ↓ until the sound becomes normal, then press ⊕.

4 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the "Fine" tuning feature.

(1) Press ↑ or ↓ to select "Fine", then press ⊕.

(2) Press ↑ or ↓ to select "Manual", then press ⊕.

(3) Press ↑,↓,← or → until the picture and sound quality are optimal, then press ⊕.

The + or – icon on the menu flashes while tuning.

5 If you want to skip this program number when using PROG +/–, you can select the "Skip" feature.

(1) Press ↑ or ↓ to select "Skip", then press ⊕.

(2) Press ↑ or ↓ to select "On", then press ⊕.

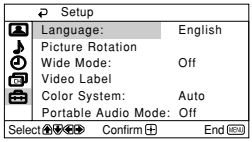
To cancel, select "Off", then press ⊕.

■ Changing the “Setup” setting

The “Setup” menu allows you to change the menu language, adjust the picture position, change the picture size, label the connected equipment, select the color system and enjoy audio equipment sound.

1 Press MENU.

2 Press ↑ or ↓ to select the “Setup” icon (), then press ⊕.



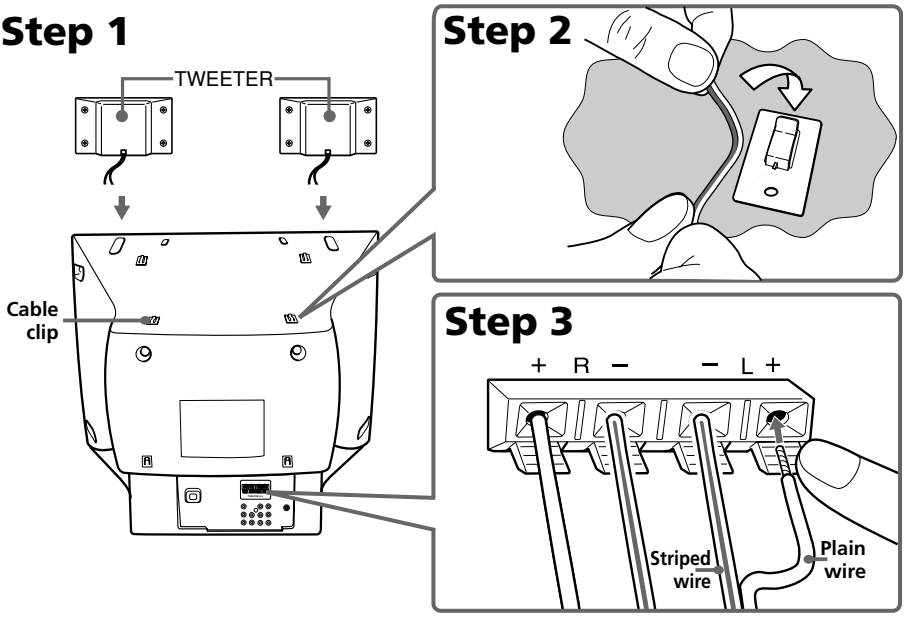
3 Press ↑ or ↓ to select the desired item (e.g., “Language”), then press ⊕.

Select	To
“Language”	change the menu language. Press ↑ or ↓ to select either “English” or “عربي” (Arabic), then press ⊕.
“Picture Rotation” (KV-HW21M85/ HW21M81 only)	adjust the picture position when it is not aligned with the TV screen. Press ← or → to adjust the picture position, then press ⊕.
“Wide Mode”	choose either “On” or “Off” (see page 9).
“Video Label”	label the connected equipment. (1) Select “Video Input” and press ⊕. Press ↑ or ↓ to select the input you want to label, then press ⊕. (2) Select “Label” and press ⊕, then press ↑ or ↓ to select the label options: ”Video 1/Video 2/DVD”, “VCR”, “SAT”, “Game” or “Edit”*. * You may edit the video label by entering alphanumeric characters.
“Color System”	select the color system. Press ↑ or ↓ to select either “Auto”, “PAL”, “SECAM”, “NTSC3.58” or “NTSC4.43”, then press ⊕. Normally, set this to “Auto”.
“Portable Audio Mode”	enjoy the sound of audio equipment through the TV speakers while viewing picture from other inputs. Press ↑ or ↓ to select the input connected to your audio equipment: “Video1” or “Video2”, then press ⊕. You may change the picture while listening to the fixed audio input. To cancel Portable Audio Mode, select “Off” or turn off the TV.

Connecting the TWEETER

▶ KV-HW21M85 only

You can enjoy high quality sound by connecting the TWEETER.



1 Place the TWEETER on top of your TV.

2 Peel off the protective sheet at the bottom of the cable clips, stick the 6 cable clips on the rear of your TV and slide the wires through the cable clips.

3 Connect the wires to the TWEETER terminals at the rear of your TV. The plain wire should be connected to the ⊕ red terminal and the striped wire to the ⊖ black terminal.

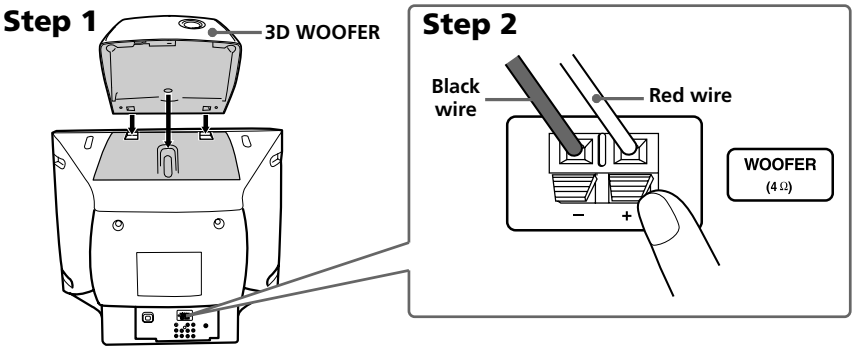
Notes

- Connect only the supplied TWEETER; otherwise your TV may malfunction.
- Unplug your TV from the wall outlet when connecting the TWEETER.
- To prevent a malfunction caused by a short circuit of the terminals, make sure that none of the TWEETER wire strands stick out, making contact with the neighbouring speaker terminal.

■ Connecting the 3D WOOFER

▶ KV-HW21M83 only

You can enjoy high quality sound by connecting the 3D WOOFER as follows:

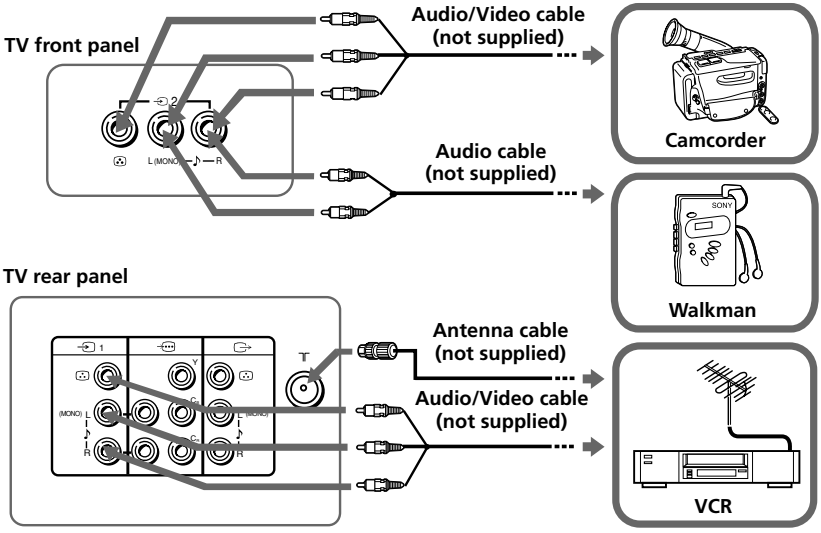


Notes

- Connect only the supplied 3D WOOFER; otherwise your TV may malfunction.
- Unplug your TV from the wall outlet when connecting the 3D WOOFER.
- To prevent a malfunction caused by a short circuit of the terminals, make sure that none of the 3D WOOFER wire strands stick out, making contact with the neighbouring 3D WOOFER terminal.

■ Connecting optional components

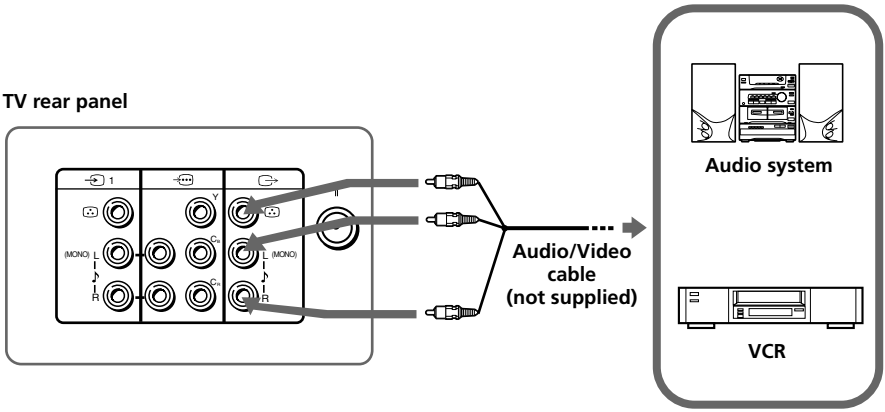
Connecting to the video input terminal (⇨)



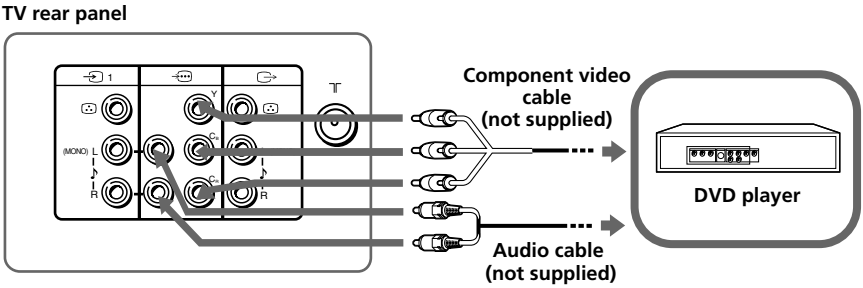
Note

- If you connect a VCR to ⊤ (antenna input), preset the signal output from the VCR to the program number 0 on the TV (see page 21).

Connecting to the monitor output terminal (⇨)



Connecting to the component video input terminal (⇨)



Notes

- If your DVD player can output interlace and progressive mode signals, select the interlace output when connecting to ⇨ (component video input) on your TV. Your TV can receive either 525i/60Hz or 625i/50Hz interlace signals.
- Some DVD player terminals may be labeled differently:

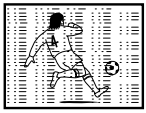
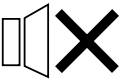
Connect	To (on the DVD player)
Y (green)	Y
C_B (blue)	C_B, P_B, C_b or B-Y
C_R (red)	C_R, P_R, C_r or R-Y

- If you select "DVD" on your TV screen, the signal from the ⇨ (monitor output) jacks will not be output properly. This does not indicate a malfunction.

■ Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

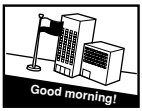
Troubleshooting guide

Symptom	Possible cause	Solutions	Page
Snowy picture  **Noisy sound**	• The connection is loose or the cable is damaged.	• Check the antenna cable and connection on the TV, VCR and at the wall.	24
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–
	• Channel presetting is inappropriate or incomplete.	• Display the “Channel Setup” menu and select “Manual Program” to preset the channel again.	21
	• Signal transmission is low.	• Try using a booster.	–
Distorted picture **Noisy sound**	• Broadcast signals are too strong.	• Turn off or disconnect the booster if it is in use.	–
Good picture **Noisy sound**	• The TV system setting is inappropriate.	• Display the “Channel Setup” menu and select the appropriate “TV System”.	21
No picture **No sound** 	• The power cord, antenna or VCR is not connected.	• Check the power cord, antenna and VCR connections.	24
	• The TV is not turned on.	• Press I/⏻ (power). • Press ⏻ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	9 8

Symptom	Possible cause	Solutions	Page
Good picture 	• The volume level is too low.	• Press + to increase the volume level.	9
No sound 	• The sound is muted.	• Press to cancel the muting.	9
No sound or inappropriate sound	• The Portable Audio Mode is functioning.	• Display the “Setup” menu and set the “Portable Audio Mode” to “Off”.	22
Dotted lines or stripes 	• There is local interference from cars, neon signs, hair dryers, power generators, etc.	• Do not use a hair dryer or other equipment near the TV. • Check the antenna setup. Contact a Sony dealer for advice.	– –
Double images or “ghosts” 	• Broadcast signals are reflected by nearby mountains or buildings.	• Use a highly directional antenna. • Use the fine tuning (“Fine”) function.	– 21
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–
	• Use of a booster is inappropriate.	• Turn off or disconnect the booster if it is in use.	–
No color 	• The color level setting is too low.	• Display the “Picture” menu and select “Personal” of “Mode”, then adjust the “Color” level in “Picture Adjustment”.	16
	• The color system setting is inappropriate.	• Display the “Setup” menu and check the “Color System” setting (usually set this to “Auto”).	22
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–

continue

continued

Symptom	Possible cause	Solutions	Page
Picture slant 	• The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV.	• Keep external speakers or other electrical equipment away from the TV. • Display the "Setup" menu and adjust "Picture Rotation" so that the picture position is optimal. (KV-HW21M85/HW21M81 only)	– 22
Abnormal color patches 	• The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV.	• Keep external speakers or other equipment away from the TV. Do not move the TV while the TV is turned on. Press ⏻ (main power) on the TV to turn off the TV for about 15 minutes, then turn it on again to demagnetize the TV.	–
"100" appears at the top of the screen and there is no Teletext display. (KV-HW21M85/ HW21M81 only)	• The channel carries no Teletext broadcast.	—	12
Teletext display is incomplete (snowy picture or double images). (KV-HW21M85/ HW21M81 only)	• Connection is loose or the cable is damaged.	• Check the antenna cable and connectionon the TV, VCR, and at the wall.	24
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–
	• Signal transmission is too low.	• Try using a booster. • Use the fine tuning ("Fine") function.	– 21
The ⏻ (standby) indicator on your TV flashes red several times after every three seconds.	• Your TV's self-diagnosis function indicates the possible problems.	• Count the number of times the ⏻ (standby) indicator flashes. Press ⏻ (main power) to turn off your TV. Contact your nearest Sony service center.	–
TV cabinet creaks.	• Changes in room temperature sometimes make the TV cabinet expand or contract, causing a noise. This does not indicate a malfunction.	—	–
A small "boom" sound is heard when the TV is turned on.	• The TV's demagnetizing function is working. This does not indicate a malfunction.	—	–

■ Specifications

	KV-HW21M83	KV-HW21M85 KV-HW21M81 KV-HW21M80	Note
Power requirements	110-240 V AC, 50/60 Hz		
Power consumption (W)	Indicated on the rear of the TV		
Television system	B/G, I, D/K, M		
Color system	PAL, PAL 60, SECAM, NTSC3.58, NTSC4.43		
Teletext language	English, Farsi (Persian)		KV-HW21M85/ KV-HW21M81 only
Channel coverage			
B/G	VHF : E2 to E12 UHF : E21 to E69 CATV : S01 to S03, S1 to S41		
I	UHF : B21 to B68 CATV : S01 to S03, S1 to S41		
D/K	VHF : C1 to C12, R1 to R12 UHF : C13 to C57, R21 to R60 CATV : S01 to S03, S1 to S41, Z1 to Z39		
M	VHF : A2 to A13 UHF : A14 to A79 CATV : A-8 to A-2, A to W+4, W+6 to W+84		
(Antenna)	75-ohm external terminal		
Audio output (Speaker)	3 W + 3 W	5 W + 5 W (TWEETER supplied KV-HW21M85 only)	
3D Woofer	9 W	—	
Number of terminal			
(Video)	Input: 2 Output: 1	Phono jacks; 1 Vp-p, 75 ohms	
(Audio)	Input: 2 Output: 1	Phono jacks; 500 mVrms	
(Component Video)	Input: 1	Phono jacks; Y: 1 Vp-p, 75 ohms, sync negative C_B: 0.7 Vp-p, 75 ohms C_R: 0.7 Vp-p, 75 ohms Audio: 500 mVrms	
(Headphone)	Output: 1	Stereo minijack	
Picture tube	21 in.		
Tube size (cm)	54		Measured diagonally
Screen size (cm)	51		Measured diagonally
Dimensions (w/h/d, mm)	630 × 470 × 492	630 × 460 × 492	
Mass (kg)	27	25	

Design and specifications are subject to change without notice.

http://www.sony.net/

Sony Corporation

SONY

4-099-165-**11** (1)

Trinitron Color TV

Operating Instructions — GB

- Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi — FR

- Avant de faire fonctionner cet appareil, lisez attentivement le présent mode d' emploi et conservez-le pour toute référence ultérieure.

دفترچه راهنما — PR

- قبل از تنظیم کردن دستگاه، لطفا دفترچه راهنما را با دقت بخوانید وبه منظور مراجعه بعدی ان رانگه دارید.

تعليمات التشغيل — AR

- قبل تشغيل الجهاز، يرجى قراءة هذا الدليل بصورة كاملة والاحتفاظ به للمراجعة مستقبلاً.

FD Trinitron

WEGA

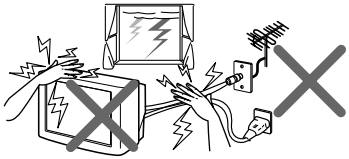
KV-HW21

© 2003 Sony Corporation

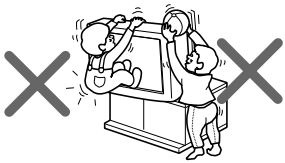
M80J

WARNING

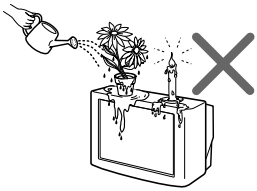
- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC.
- Do not plug in the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.
- To avoid battery leakage and damage to the remote, remove the batteries from the remote if you are not going to use it for several days. If any liquid leaks from the batteries and touches your skin, immediately wash it away with water.



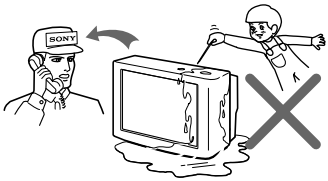
For your own safety, do not touch any part of the TV, the power cord and the antenna cable during lightning storms.



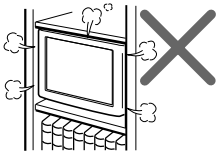
For children's safety, do not leave children alone with the TV. Do not allow children to climb onto it.



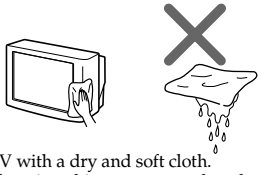
Do not place any objects on the TV. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.



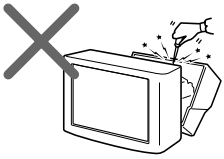
Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.



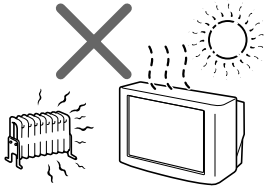
Do not block the ventilation openings of the TV. Do not install the TV in a confined space, such as a bookcase or built-in cabinet.



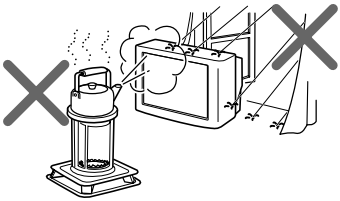
Clean the TV with a dry and soft cloth.
Do not use benzine, thinner, or any other chemicals to clean the TV. Do not attach anything (e.g., adhesive tape, cellophane tape, glue) on the painted cabinet of the TV. Do not scratch the picture tube.



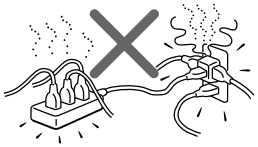
Do not open the cabinet and the rear cover of the TV as high voltages and other hazards are present inside the TV. Refer servicing and disposal of the TV to qualified personnel.



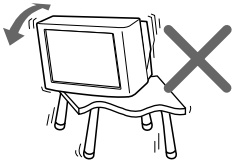
Your TV is recommended for home use only.
Do not use the TV in any vehicle or where it may be subject to excessive dust, heat, moisture or vibrations.



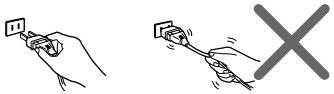
To prevent fire or shock hazard, do not expose the TV to rain or moisture.



Do not plug in too many appliances to the same power socket. Do not damage the power cord.



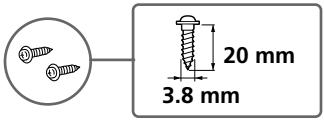
Install the TV on a stable TV stand and floor which can support the TV set weight. Ensure that the TV stand surface is flat and its area is larger than the bottom area of the TV.



Pull the power cord out by the plug. Do not pull the power cord itself. Even if your TV is turned off, it is still connected to the AC power source (mains) as long as the power cord is plugged in. Unplug the TV before moving it or if you are not going to use it for several days.

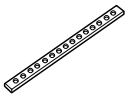
■ Securing the TV

To prevent the TV from falling, use the supplied screws, clamps and band to secure the TV.

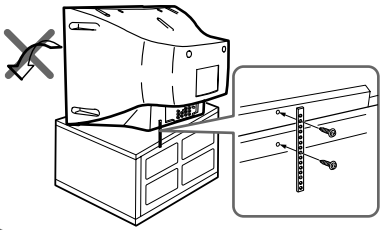


screws

clamps

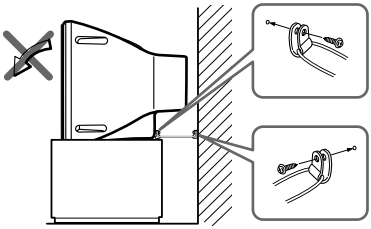


band



Screw the band to the TV stand and to the provided hole at the rear of your TV.

or



(1) Put a cord or chain through the clamps.
(2) Screw one clamp to a wall or pillar and the other clamp to the provided hole at the rear of your TV.

Note

• Use only the supplied screws. Use of other screws may damage the TV.

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Changing the "Setup" setting **21**

Additional Information

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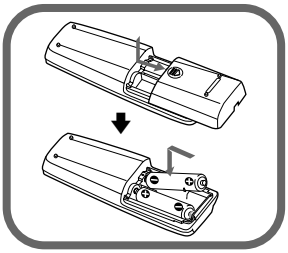
GB

■ Getting Started

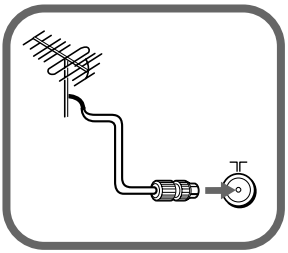


Step 1

Insert the batteries (supplied) into the remote.

Note

- Do not use old or different types of batteries together.

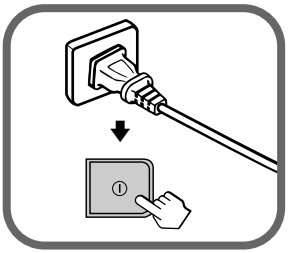


Step 2

Connect the antenna cable (not supplied) to ⊤ (antenna input) at the rear of the TV.

Tip

- You can also connect your TV to other optional components (see page 22).

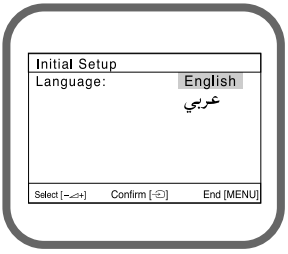


Step 3

Plug in the power cord, then press ⏻ on the TV to turn it on.

Note

- The ⏻ (standby) indicator flashes green for a few seconds when turning on the TV. This does not indicate a malfunction.



Step 4

Set up the TV by following the instructions of the “Initial Setup” menu (see page 7).

■ Setting up your TV ("Initial Setup")

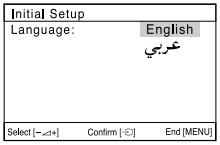
When you turn on your TV for the first time, the "Initial Setup" menu will appear. You may change the menu language and preset the TV channels automatically using the buttons on the top control panel.

Tip

- The MENU, ⊕ and ↑/↓/←/→ buttons on the remote control can also be used for the operations below.

1 Press ◿ +/– to select the desired menu language, then press ⊖.

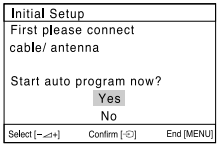
The selected menu language appears.



2 Press ◿ +/– to select "Yes", then press ⊖ to preset the channels automatically or select "No" to skip automatic channel presetting.

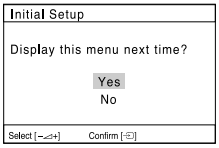
Once you select "Yes", your TV will start searching for all the available channels.

If the message "No channel found. Please connect cable/antenna." appears, check your TV connections, then press ⊖.



3 Press ◿ +/– to select "No", then press ⊖. This menu will not appear again the next time you turn on the TV by pressing ⏻.

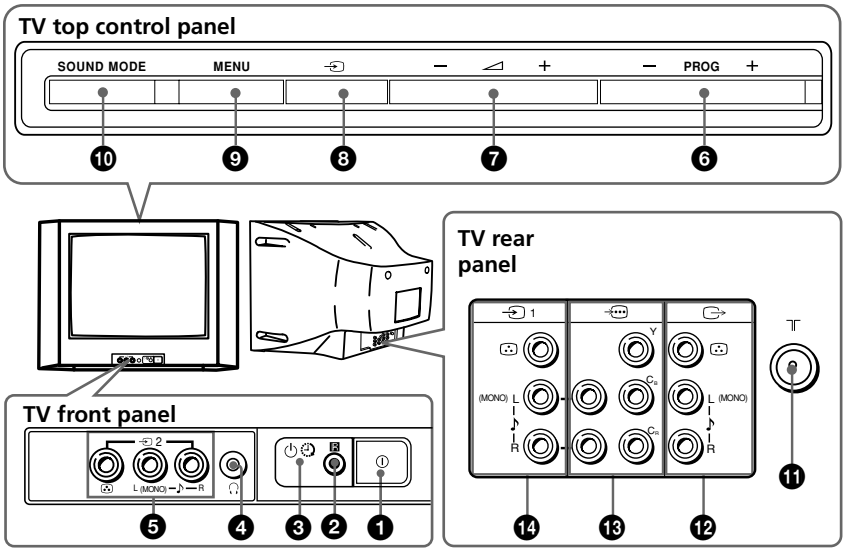
To allow this menu to appear again, select "Yes", then press ⊖.



Tips

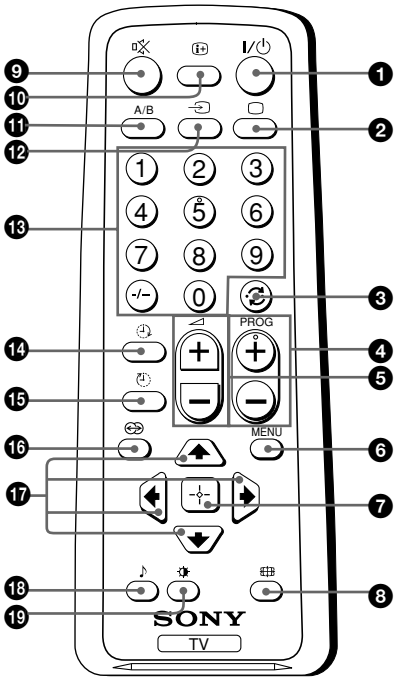
- You can immediately go to the end of the "Initial Setup" menu by pressing MENU.
- You can also set up your TV by pressing the MENU button on the top control panel for about five seconds or using the menu system (see page 12).

■ TV top control, front and rear panels



Button/Terminal	Function	Page
❶ ⏻	Turn off or turn on the TV.	6
❷	Remote control sensor.	–
❸	Wake Up indicator.	18
❸	Standby indicator.	6
❹	Headphone jack.	–
❺ 2	Video input terminal 2.	22
❻ PROG +/–	Select program number.	–
❼ +/–	Adjust volume.	–
❽	Select TV or video input.	22
Menu operations		
❼ +/–	Select and adjust items.	–
❽	Confirm selected items.	–
❾ MENU	Display or cancel the menu.	–
❿ SOUND MODE	Select sound mode options with a 5-Band Graphic Equalizer display.	11
⓫	Antenna input terminal.	22
⓬	Monitor output terminal.	23
⓭	Component video input terminal.	23
⓮ 1	Video input terminal 1.	22

Using the remote control and basic functions



Button	Description	Page
❶ I/⏻	Turn off temporarily or turn on the TV.	–
❷ ▢	Display the TV program.	–
❸ ↻	Jump to previous program number.	–
❹ PROG +/–	Select program number.	–
❺ ◿ +/–	Adjust volume.	–
❽ ▭	Change the picture size: “On” (16:9 wide-mode), “Off”.	–
❾ 🔇	Mute the sound.	–
❿ ⓘ+	Display on-screen information.	–
⓬ →	Select TV or video input.	22
⓭ 0 – 9, -/--	Input numbers.	–
⓰ ⇔	Select surround mode options: “On” (surround), “Simulated” (stereo-like monaural sound), “Off”.	–

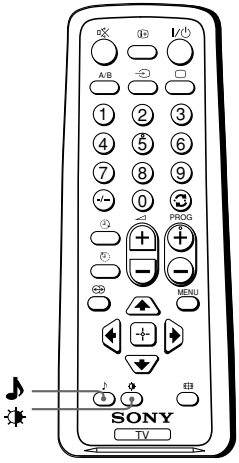
continue

continued

Button	Description	Page
⓲ ♪	Select sound mode options with a 5-Band Graphic Equalizer display.	11
⓳ ☼	Select picture mode options.	11
Menu operations		
❻ MENU	Display or cancel the menu.	14
❼ ⊕	Confirm selected items.	14
⓱ ↑, ↓, ←, →	Select and adjust items.	14
Timer operations		
⓮ ◷	Set TV to turn on automatically.	–
⓯ ◷	Set TV to turn off automatically.	–
Stereo/bilingual operations		
⓫ A/B	Not function for your TV.	–

■ Selecting the picture and sound modes

You can select picture and sound modes and adjust the setting to your preference in the “Personal” option.



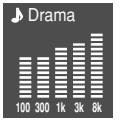
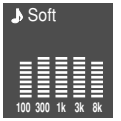
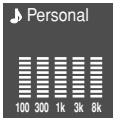
Selecting the picture mode

Press ✲ to select the desired picture mode.

Select	To view
“Dynamic”	high contrast pictures.
“Standard”	normal pictures.
“Soft”	mild pictures.
“Personal”	the last adjusted picture setting from the “Picture Adjustment” option in the menu (see page 15).

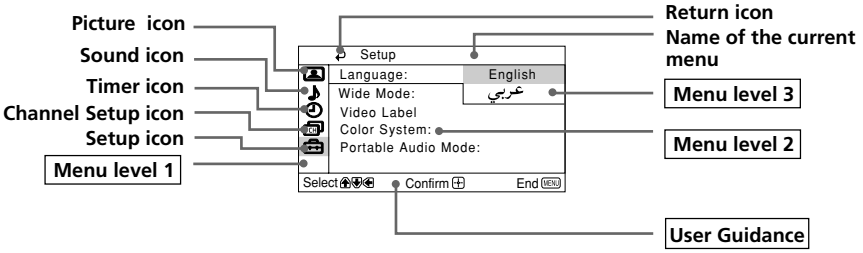
Selecting the sound mode

Press ♪ (or SOUND MODE on the top control panel) to select the desired sound mode with a 5-Band Graphic Equalizer display.

Select		To listen to
“Dynamic”		dynamic and clear sound that emphasizes both the low and high tones.
“Drama”		sound that emphasizes voice and high tones.
“Soft”		soft, natural and relaxing sounds.
“Personal”		the last adjusted sound setting from the “Sound Adjustment” option in the menu (see page 17).

■ Introducing the menu system

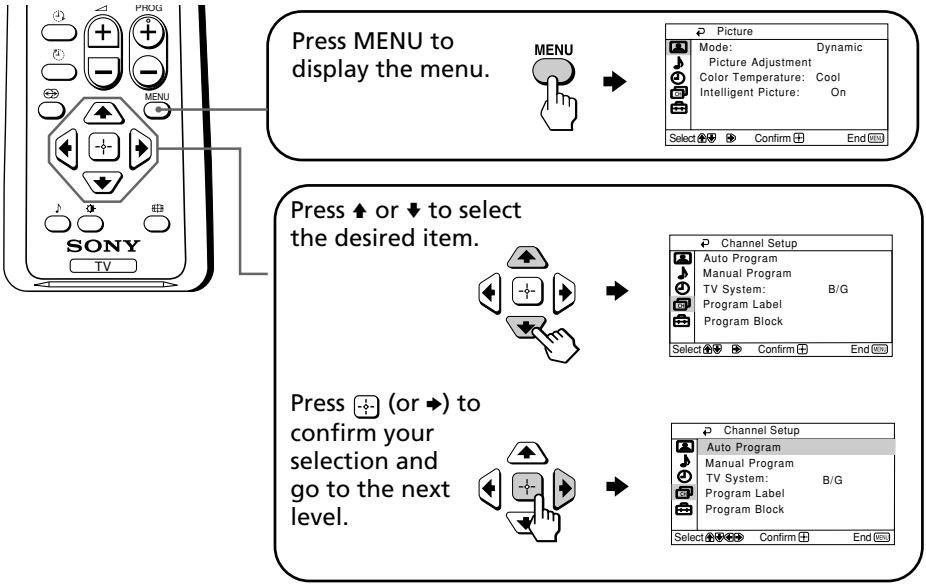
The MENU button lets you open a menu and change the settings of your TV. The following is an overview of the menu system.



Level 1	Level 2	Level 3/Function	Page
"Picture"	"Mode"	Select the picture mode: "Dynamic" → "Standard" → "Soft" → "Personal"	15
	"Picture Adjustment"	Adjust the "Personal" option: "Picture" → "Brightness" → "Color" → "Hue" → "Sharpness" → "Reset"	
	"Color Temperature"	Adjust white color tint: "Cool" → "Neutral" → "Warm"	
	"Intelligent Picture"	Optimize picture quality: "On" → "Off"	
"Sound"	"Mode"	Select the sound mode: "Dynamic" → "Drama" → "Soft" → "Personal"	16
	"Sound Adjustment"	Adjust sound frequency settings of "Personal" option: "Adjust" → "Reset"	
	"Balance"	Select to emphasize the left and right speakers.	
	"Intelligent Volume"	Adjust volume automatically: "On" → "Off"	
	"Surround"	Select the surround mode: "On" → "Simulated" → "Off"	

Level 1	Level 2	Level 3/Function	Page
"Timer"	"Sleep Timer"	Set TV to turn off automatically.	18
	"Wake Up Timer"	Set TV to turn on automatically.	
"Channel Setup"	"Auto Program"	Preset channels automatically.	19
	"Manual Program"	Preset channels manually.	
	"TV System"	Select the TV system: "B/G" → " I" → "D/K" → "M"	
	"Program Label"	Label the program number.	
	"Program Block"	Block unwanted programs.	
"Setup"	"Language"	Change the menu language: "English" → "عربي "(Arabic)	21
	"Wide Mode"	Change the picture size: "On" (16:9 wide-mode) → "Off"	
	"Video Label"	Label the connected equipment.	
	"Color System"	Select the color system: "Auto" → "PAL" → "SECAM" →"NTSC3.58" → "NTSC4.43"	
	"Portable Audio Mode"	Select the input connected to your audio equipment: "Video1" → "Video2" → "Off"	

How to use the menu



Other menu operations

To	Press
Adjust the setting value	↑, ↓, ← or →.
Move to the next/previous menu level	← or →.
Cancel the menu	MENU.

Tips

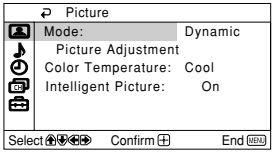
- If you want to exit from Menu level 2 to Menu level 1, press ↑ or ↓ until the return icon (↩) is highlighted, then press ⊕.
- The MENU, ⊖ and ◿ +/– buttons on the top control panel can also be used for the operations above (see page 8).

■ Changing the “Picture” setting

The “Picture” menu allows you to adjust the picture settings.

1 Press MENU.

2 Make sure the “Picture” icon ( ) is selected, then press .



3 Press ↑ or ↓ to select the desired item (e.g., “Mode”), then press .

Select	To
“Mode”	choose either “Dynamic”, “Standard”, “Soft” or “Personal”* (see page 11).
“Color Temperature”	adjust white color tint. Choose either “Cool” (blue tint), “Neutral” (neutral tint) or “Warm” (red tint).
“Intelligent Picture”	optimize picture quality. Press ↑ or ↓ to select “On”, then press . To cancel, select “Off”, then press .

* You can adjust the setting to your personal preference in the “Picture Adjustment” and “Color Temperature” options only when the “Personal” mode is selected.

Adjusting the “Picture Adjustment” items under “Personal” mode

1 Press ↑ or ↓ to select either “Picture” (contrast), “Brightness”, “Color”, “Hue” (color tones) or “Sharpness”, then press .

Selecting “Reset” will set your TV to the factory setting.

2 Press ↑,↓,← or → to adjust the setting of your selected item, then press .

3 Repeat the above steps to adjust other items.

The adjusted settings will be received when you select “Personal”.

Notes

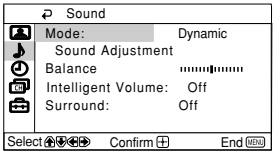
- “Hue” can be adjusted for the NTSC color system only.
- Reducing “Sharpness” can also reduce picture noise.

■ Changing the “Sound” setting

The “Sound” menu allows you to adjust the sound settings.

1 Press MENU.

2 Press ↑ or ↓ to select the “Sound” icon (♪), then press ⊕.



3 Press ↑ or ↓ to select the desired item (e.g., “Mode”), then press ⊕.

Select	To
“Mode”	choose either “Dynamic”, “Drama”, “Soft” or “Personal”* (see page 11).
“Balance”	Press ↓ or ← to emphasize the left speaker. Press ↑ or → to emphasize the right speaker.
“Intelligent Volume”	adjust the volume of all program numbers and video inputs automatically. Press ↑ or ↓ to select “On”, then press ⊕. To cancel, select “Off”, then press ⊕.
“Surround”	choose either “On”, “Simulated” or “Off” (see page 9).

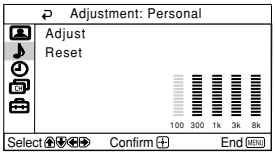
* You can adjust the setting to your personal preference in the “Sound Adjustment” option only when the “Personal” mode is selected (see page 17).

Adjusting the “Sound Adjustment” item under “Personal” mode

The 5-Band Graphic Equalizer feature allows you to adjust sound frequency settings of “Personal” mode in the menu.

1 Make sure that “Adjust” is selected, then press ⊕.

Selecting “Reset” will set your TV to the factory setting.



2 Press ← or → to select the desired sound frequency, then press ↑ or ↓ to adjust the setting and press ⊕.

The adjusted settings will be received when you select “Personal”.

Notes

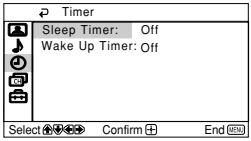
- Adjusting higher frequency will affect higher pitched sound and adjusting lower frequency will affect lower pitched sound.
- You may display the settings directly using the SOUND MODE button on the top control panel (see page 8) or ♪ button on the remote control (see page 10).

■ Changing the “Timer” setting

The “Timer” menu allows you to set TV to turn off and turn on automatically.

1 Press MENU.

2 Press ↑ or ↓ to select the “Timer” icon (), then press .



3 Press ↑ or ↓ to select the desired item (e.g., “Sleep Timer”), then press .

Select	To
“Sleep Timer”	set TV to turn off automatically. Press ↑ or ↓ to select the desired period of time (max. of 1 hour and 30 minutes), then press .
“Wake Up Timer”	set TV to turn on automatically. Press ↑ or ↓ to select the desired period of time (max. of 12 hours), then press . After the selected length of time, the TV switches on automatically and “Wake Up Timer” will appear on the screen. The indicator on the TV lights up amber once you set the “Wake Up Timer”.

Notes

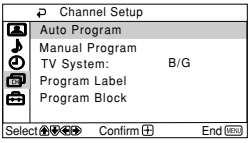
- You can also cancel “Sleep Timer” and “Wake Up Timer” by turning off the TV’s main power.
- If no buttons or controls are pressed for more than one hour after the TV is turned on using the “Wake Up Timer”, the TV automatically goes into standby mode.

■ Changing the “Channel Setup” setting

The “Channel Setup” menu allows you to preset channels automatically, manually preset channels, select the TV system, label the program number and block unwanted programs.

1 Press MENU.

2 Press ↑ or ↓ to select the “Channel Setup” icon (CH), then press ⊕.



3 Press ↑ or ↓ to select the desired item (e.g., “Auto Program”), then press ⊕.

Select	To
“Auto Program”	preset channels automatically.
“Manual Program”	manually preset desired channels and channels that cannot be preset automatically (see **Presetting channels manually** on page 20).
“TV System”	select the TV system. Press ↑ or ↓ to select either “B/G”, “I”, “D/K” or “M”, then press ⊕.
“Program Label”	label the program number. (1) Select “Program” and press ⊕. Press ↑ or ↓ to select the program number, then press ⊕. (2) Select “Label” and press ⊕, then press ↑ or ↓ to select alphanumeric characters for the label.
“Program Block”	block unwanted programs. (1) Select “Program” and press ⊕. Press ↑ or ↓ to select the program number, then press ⊕. (2) Select “Block” and press ⊕, then press ↑ or ↓ to choose either “On” or “Off”. If you preset a locked program number, that program number will be unlocked automatically.

Note

- During automatic channel presetting, your TV screen will indicate “B/G”, “I”, “D/K” or “M” for the “TV System”.

continue

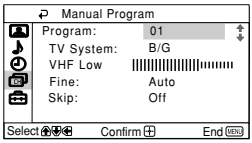
continued

Presetting channels manually

1 After selecting "Manual Program", select the program number to which you want to preset a channel.

(1) Make sure "Program" is selected, then press ⊕.

(2) Press ↑ or ↓ until the program number you want to preset appears on the menu, then press ⊕.



2 Select the desired channel.

(1) Make sure either "VHF Low", "VHF High" or "UHF" is selected, then press ⊕.

(2) Press ↑ or ↓ until the desired channel's broadcast appears on the TV screen, then press ⊕.

3 If the sound of the desired channel is abnormal, select the appropriate TV system.

(1) Press ↑ or ↓ to select "TV System", then press ⊕.

(2) Press ↑ or ↓ until the sound becomes normal, then press ⊕.

4 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the "Fine" tuning feature.

(1) Press ↑ or ↓ to select "Fine", then press ⊕.

(2) Press ↑ or ↓ to select "Manual", then press ⊕.

(3) Press ↑,↓,← or → until the picture and sound quality are optimal, then press ⊕.

The + or – icon on the menu flashes while tuning.

5 If you want to skip this program number when using PROG +/–, you can select the "Skip" feature.

(1) Press ↑ or ↓ to select "Skip", then press ⊕.

(2) Press ↑ or ↓ to select "On", then press ⊕.

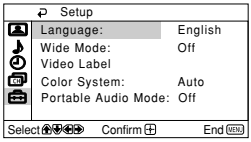
To cancel, select "Off", then press ⊕.

■ Changing the “Setup” setting

The “Setup” menu allows you to change the menu language, change the picture size, label the connected equipment, select the color system and enjoy audio equipment sound.

1 Press MENU.

2 Press ↑ or ↓ to select the “Setup” icon (), then press ⊕.

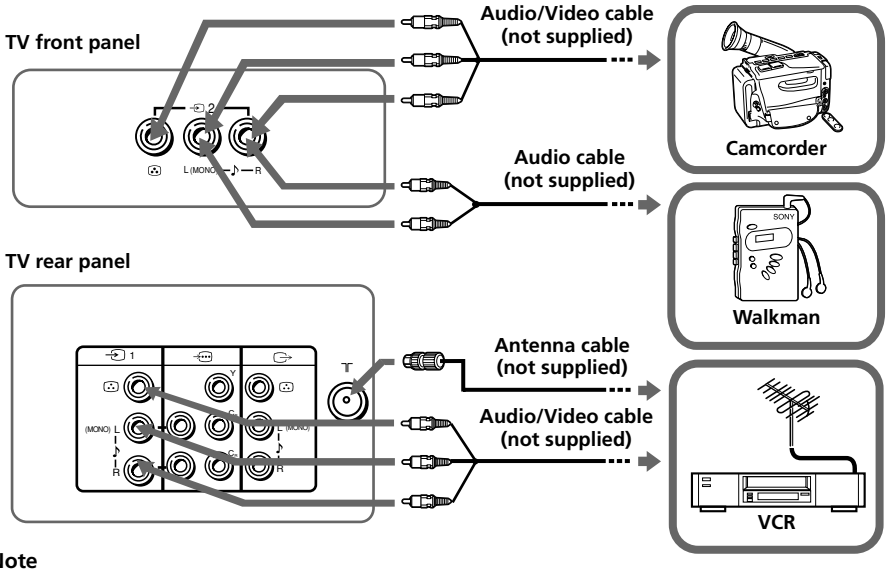


3 Press ↑ or ↓ to select the desired item (e.g., “Language”), then press ⊕.

Select	To
“Language”	change the menu language. Press ↑ or ↓ to select either “English” or “عربي ” (Arabic), then press ⊕.
“Wide Mode”	choose either “On” or “Off” (see page 9).
“Video Label”	label the connected equipment. (1) Select “Video Input” and press ⊕. Press ↑ or ↓ to select the input you want to label, then press ⊕. (2) Select “Label” and press ⊕, then press ↑ or ↓ to select the label options: ”Video 1/Video 2/DVD”, “VCR”, “SAT”, “Game” or “Edit”*. * You may edit the video label by entering alphanumeric characters.
“Color System”	select the color system. Press ↑ or ↓ to select either “Auto”, “PAL”, “SECAM”, “NTSC3.58” or “NTSC4.43”, then press ⊕. Normally, set this to “Auto”.
“Portable Audio Mode”	enjoy the sound of audio equipment through the TV speakers while viewing picture from other inputs. Press ↑ or ↓ to select the input connected to your audio equipment: “Video1” or “Video2”, then press ⊕. You may change the picture while listening to the fixed audio input. To cancel Portable Audio Mode, select “Off” or turn off the TV.

■ Connecting optional components

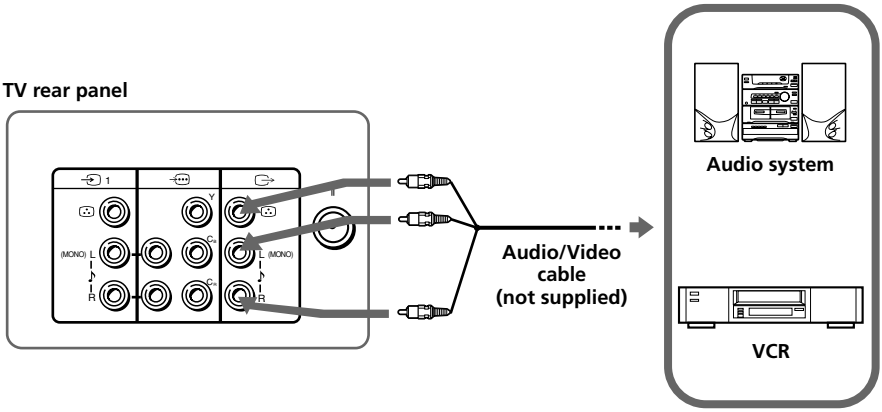
Connecting to the video input terminal ( )



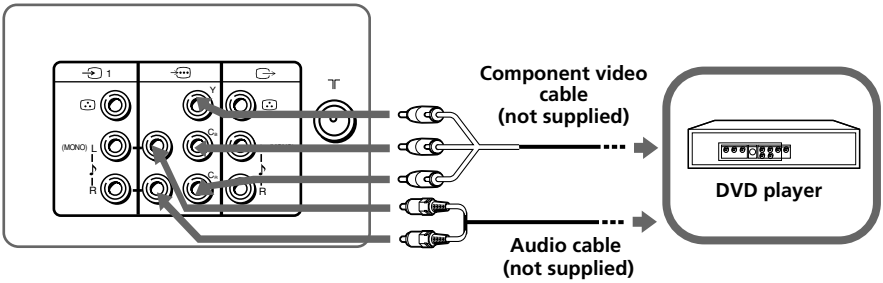
Note

- If you connect a VCR to ⅂ (antenna input), preset the signal output from the VCR to the program number 0 on the TV (see page 20).

Connecting to the monitor output terminal ( )



Connecting to the component video input terminal ( )



Notes

- If your DVD player can output interlace and progressive mode signals, select the interlace output when connecting to (component video input) on your TV. Your TV can receive either 525i/60Hz or 625i/50Hz interlace signals.
- Some DVD player terminals may be labeled differently:

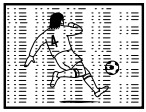
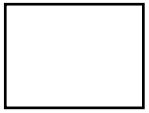
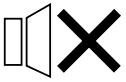
Connect	To (on the DVD player)
Y (green)	Y
C_B (blue)	C_B, P_B, C_b or B-Y
C_R (red)	C_R, P_R, C_r or R-Y

- If you select "DVD" on your TV screen, the signal from the (monitor output) jacks will not be output properly. This does not indicate a malfunction.

■ Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

Troubleshooting guide

Symptom	Possible cause	Solutions	Page
Snowy picture 	• The connection is loose or the cable is damaged.	• Check the antenna cable and connection on the TV, VCR and at the wall.	22
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–
Noisy sound	• Channel presetting is inappropriate or incomplete.	• Display the “Channel Setup” menu and select “Manual Program” to preset the channel again.	20
	• Signal transmission is low.	• Try using a booster.	–
Distorted picture	• Broadcast signals are too strong.	• Turn off or disconnect the booster if it is in use.	–
Noisy sound			
Good picture	• The TV system setting is inappropriate.	• Display the “Channel Setup” menu and select the appropriate “TV System”.	20
Noisy sound			
No picture 	• The power cord, antenna or VCR is not connected.	• Check the power cord, antenna and VCR connections.	22
	• The TV is not turned on.	• Press I/⏻ (power). • Press ⏻ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	9 8
No sound 			

Symptom	Possible cause	Solutions	Page
Good picture **No sound** 	• The volume level is too low.	• Press + to increase the volume level.	9
	• The sound is muted.	• Press to cancel the muting.	9
No sound or inappropriate sound	• The Portable Audio Mode is functioning.	• Display the “Setup” menu and set the “Portable Audio Mode” to “Off”.	21
Dotted lines or stripes 	• There is local interference from cars, neon signs, hair dryers, power generators, etc.	• Do not use a hair dryer or other equipment near the TV. • Check the antenna setup. Contact a Sony dealer for advice.	– –
Double images or “ghosts” 	• Broadcast signals are reflected by nearby mountains or buildings.	• Use a highly directional antenna. • Use the fine tuning (“Fine”) function.	– 20
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–
	• Use of a booster is inappropriate.	• Turn off or disconnect the booster if it is in use.	–
No color 	• The color level setting is too low.	• Display the “Picture” menu and select “Personal” of “Mode”, then adjust the “Color” level in “Picture Adjustment”.	15
	• The color system setting is inappropriate.	• Display the “Setup” menu and check the “Color System” setting (usually set this to “Auto”).	21
	• The antenna setup is inappropriate.	• Check the antenna setup. Contact a Sony dealer for advice.	–

continue

■ Specifications

	KV-HW21M80J	Note
Power requirements	110-240 V AC, 50/60 Hz	
Power consumption (W)	Indicated on the rear of the TV	
Television system	B/G, I, D/K, M	
Color system	PAL, PAL 60, SECAM, NTSC3.58, NTSC4.43	
Channel coverage		
B/G	VHF : E2 to E12 UHF : E21 to E69 CATV : S01 to S03, S1 to S41	
I	UHF : B21 to B68 CATV : S01 to S03, S1 to S41	
D/K	VHF : C1 to C12, R1 to R12 UHF : C13 to C57, R21 to R60 CATV : S01 to S03, S1 to S41, Z1 to Z39	
M	VHF : A2 to A13 UHF : A14 to A79 CATV : A-8 to A-2, A to W+4, W+6 to W+84	
(Antenna)	75-ohm external terminal	
Audio output (Speaker)	5 W + 5 W	
Number of terminal		
(Video)	Input: 2 Output: 1 — Phono jacks; 1 Vp-p, 75 ohms	
(Audio)	Input: 2 Output: 1 — Phono jacks; 500 mVrms	
(Component Video)	Input: 1 — Phono jacks; Y: 1 Vp-p, 75 ohms, sync negative C_B: 0.7 Vp-p, 75 ohms C_R: 0.7 Vp-p, 75 ohms Audio: 500 mVrms	
(Headphone)	Output: 1 — Stereo minijack	
Picture tube	21 in.	
Tube size (cm)	54	Measured diagonally
Screen size (cm)	51	Measured diagonally
Dimensions (w/h/d, mm)	630 × 460 × 492	
Mass (kg)	25	

Design and specifications are subject to change without notice.

http://www.sony.net/

Sony Corporation